EUROPEAN ORGANISATION
FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL

8.33 KHZ ABOVE FL195

USER GUIDE

Edition Number	:	6-0
Edition Date	:	July 2006
Status	:	Draft
Intended for	:	EATM Stakeholders

DOCUMENT CHARACTERISTICS

TITLE		
8.33 KHZ ABOVE FL195 USER GUIDE		
	EATMP Infocentre Reference:	
Document Identifier	**Edition Number:**	6.0
	Edition Date:	28July 06

Abstract

The 8.33 User Guide aims to provide in a single document a description of 8.33 kHz channel spacing above FL195, including institutional provisions, flight planning, operational procedures, aircraft retrofit, safety, frequency management and programme management aspects.

Keywords

8.33 kHz | User Guide | Above FL195 | ICAO EUR Region

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STATUS, AUDIENCE AND ACCESSIBILITY

Status		Intended for		Accessible via	
Working Draft	☐	General Public	☐	Intranet	☐
Draft	☑	EATMP Stakeholders	☑	Extranet	☐
Proposed Issue	☐	Restricted Audience	☐	Internet (www.eurocontrol.int)	☑
Released Issue	☐	*Printed & electronic copies of the document can be obtained from the EATMP Infocentre (see page iii)*			

ELECTRONIC SOURCE

P:\8.33 kHz Program\Official Documents\Eurocontrol\8.33 User Guide\5.0	P:\EATM\DAP\BD_NET\8.33 kHz\8.33 EXP Phase\Work Packages\User Guide	
Windows_NT		
Windows_NT	Microsoft Word 10.0	1249 Kb

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DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

EDITION NUMBER	EDITION DATE	INFOCENTRE REFERENCE	REASON FOR CHANGE	PAGES AFFECTED
1.0	6 May 1997		Approved by the EATMP 8.33 Programme Management Cell	
2.0	21 May 1997		Editorial changes mentioned during COM Team 9 in paragraphs 4.3.1.4 and 4.3.1.15 of edition 1.0	
3.0	23 July 1998		Approved by EATMP	
4.0	19 April 1999		Upgrades further to 8.33 Regional co-ordination meetings with the ICAO EUR Region States	
5.0	20 December 2001		Full review for the 8.33 kHz Horizontal Expansion	All
5.1	21 January 2002		FYROM joined HEX Programme. State comments. Updated references to ICAO SUPPS DOC 7030/4.	1,2,5,6,7,8,16,23,25,31, 39,46-51, 57,59-62,64-67,77,82-83.
6.0	28 July 2006		Full review for the 8.33 kHz above FL195	All

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EXECUTIVE SUMMARY

The mandatory carriage and operation of 8.33 kHz capable radio equipment above FL195 in the ICAO EUR Region is effective from 15 March 2007.

Eurocontrol Permanent Commission Recommendation 05/06 urges that the mandatory carriage above FL195 be enforced, as a minimum, in those States that enforce above FL245. Details of any exemptions granted by States will be described in State AIPs. The recommendation for a harmonised enforcement of mandatory carriage at the same flight level throughout Europe is principally driven by the need to establish a homogeneous area of operations in order to:

- Mitigate against safety hazards resulting from non-8.33 kHz aircraft;
- Minimise ATC workload at complex transition zones;
- Allow further 8.33 kHz channels to be introduced at a later date in line with operational needs and ground infrastructure developments.

The "8.33 kHz above FL195 User Guide" is intended for any person engaged in air traffic services, aircraft operations, regulation, aviation industry and other related sectors, that may be impacted by the introduction of 8.33 kHz channel spacing above FL195 within the ICAO EUR region.

The User Guide aims to provide in a single document a description of 8.33 kHz channel spacing above FL195, including institutional provisions, flight planning, operational procedures, aircraft retrofit, safety, frequency management and programme management aspects.

This document is a draft. The final issue will take into account the amendment to ICAO Doc 7030

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1 INTRODUCTION

In accordance with Eurocontrol Permanent Commission Recommendation 05/6, 8.33 kHz channel spacing operations will commence above FL195 in the ICAO EUR Region from 15 March 2007.

The 8.33 kHz User Guide is intended for any person engaged in air traffic services, aircraft operations, regulation, aviation industry and other related sectors, that may be impacted by the introduction of 8.33 kHz channel spacing above FL195.

The 8.33 kHz User Guide aims to provide in a single document a description of 8.33 kHz channel spacing above FL195, including institutional provisions, flight planning, operational procedures, aircraft retrofit, safety, frequency management and programme management aspects.

1.1 8.33 KHZ CHANNEL SPACING

1.1.1 Radio communication systems for aircraft are used primarily for the purpose of air traffic control (ATC). Communications for air traffic control use the Very High Frequency (VHF) band between 118 and 137 MHz. The same frequency can be reassigned many times provided that there are no interference problems. At the time of writing, there are about 11,000 VHF assignments in the band 118-137 MHz.

1.1.2 In line with increases in air traffic levels, which are predicted to double by 2020 in comparison to the year 2000, there has been an increase in the demand for operational improvements like re-sectorisation. These in turn have led to an increase in the demand for VHF assignments. The number of available VHF assignments can be increased by optimising frequency re-use (improved coordination and possibly confining VHF assignments to smaller areas), using more spectrum (118 to 136 MHz increased to 137 MHz), and splitting the radio spectrum into narrower band widths (50 kHz to 25 kHz channels)

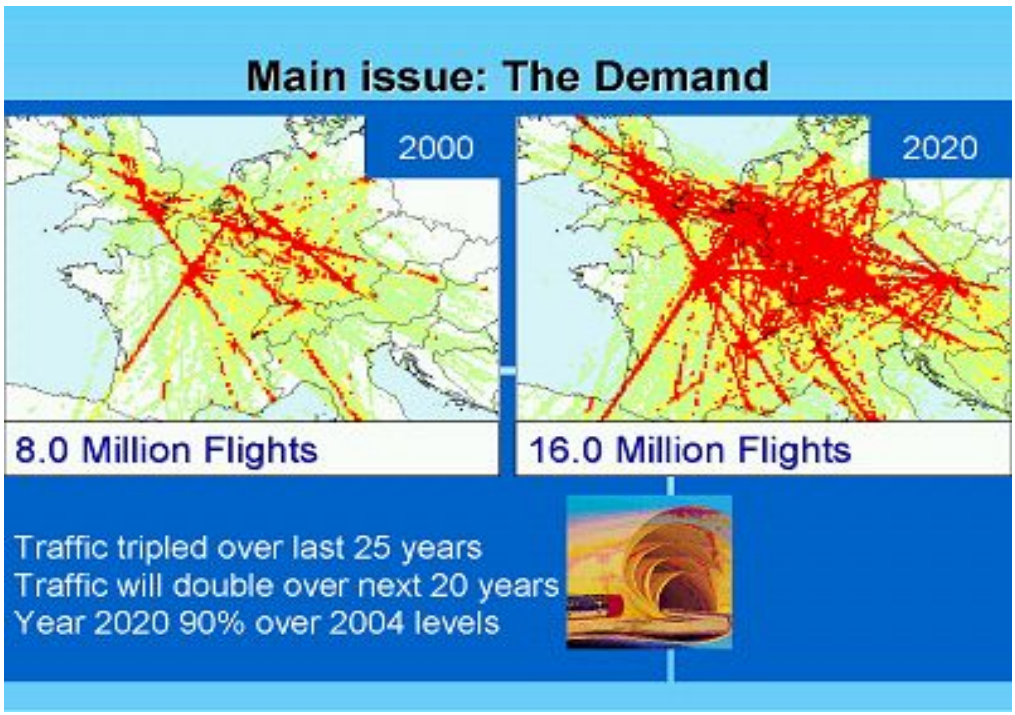


Figure 1.1 – Predicted air traffic

1.1.3 In 1994, ICAO decided to introduce a further channel split from 25 to 8.33 kHz. Subsequently, 8.33 kHz was introduced above FL245 in the ICAO EUR Region from October 1999. At the time of writing, 8.33 kHz channels have been implemented in the airspace of over 20 ICAO EUR Region States.

1.2 8.33 KHZ ABOVE FL195

1.2.1 The mandatory carriage and operation of 8.33 kHz capable radio equipment above FL195 in the ICAO EUR Region is effective from 15 March 2007.

1.2.2 Eurocontrol Permanent Commission Recommendation 05/06 urges that the mandatory carriage above FL195 be enforced, as a minimum, in those States that enforce above FL245. Details of any exemptions granted by States should be described in State AIPs. The recommendation for a harmonised enforcement of mandatory carriage at the same flight level throughout Europe is principally driven by the need to establish a homogeneous area of operations in order to:

- Mitigate against safety hazards resulting from non-8.33 kHz aircraft;
- Minimise ATC workload at complex transition zones;
- Allow further 8.33 kHz channels to be introduced at a later date in line with operational needs and ground infrastructure developments.

1.2.3 An 8.33 kHz policy for State aircraft is at an advanced stage of development. The policy foresees that State aircraft flying as GAT above FL195 should be equipped by the end of a transition period – expected to be 2009 – with exemptions being limited to justified exceptional circumstances.

1.2.4 The frequency planning benefits due to 8.33 kHz channel spacing are driven by the number of 25 to 8.33 kHz conversions that can be achieved. The main conversions in the above FL195 phase will be implemented in France, Italy and the UK, during 2007 and early 2008. Other States may implement subject to the availability of suitable sectors.

1.2.5 The implementation of 8.33 kHz on the ground requires modifications to ground-based radios and, in some cases, entails significant infrastructure changes including the building of new radio sites. Moreover, changes are required to ATC displays and flight plan processing systems, principally to assist controllers in identifying potentially non-8.33 kHz compliant aircraft.

1.2.6 It is essential that all operational personnel, in particular air traffic controllers, flight dispatchers and flight crew, are familiar with the operational changes resulting from 8.33 kHz above FL195.

2 INSTITUTIONAL PROVISIONS

The introduction of 8.33 kHz in the European airspace is supported by a number of institutional provisions. These include ICAO decisions and EUROCONTROL recommendations, National regulations and proposed European legislation.

2.1 ICAO

2.1.1 The original decisions and recommendations to introduce 8.33 kHz as a solution for VHF congestion in the ICAO EUR Region were taken in 1994 at the Special European Regional Air Navigation meeting (EUR RAN) and in 1995 at the Special Communications / Operations Division meeting (SP COM/OPS/95).

2.1.2 The carriage and operation of 8.33 kHz channel spacing capable radio communication equipment became mandatory in the ICAO EUR region on 7th October 1999 for aircraft operating above FL245.

2.1.3 The decisions to expand the 8.33 kHz mandatory carriage requirement in the ICAO EUR region to lower flight levels (below FL245) were taken at EANPG 44 in December 2002.

2.1.4 In order to incorporate the mandatory carriage requirement of 8.33 kHz above FL195 within the ICAO EUR Region, ICAO has issued a State letter (Reference T 13/4.E–WC–05-0461.CNS, dated 12 August 2005) with a proposal to amend the ICAO Regional Supplementary Procedures – Doc 7030/4.

2.2 EUROCONTROL

2.2.1 The EUROCONTROL Agency (European Organisation for the Safety of Air Navigation) was invited to manage the implementation programme of 8.33 kHz in the EUR Region on behalf of ICAO.

2.2.2 In April 2005, the EUROCONTROL Member States approved Permanent Commission Recommendation 05/6 for an 8.33 kHz implementation above FL195 in the ICAO EUR Region with a carriage date from 15 March 2007.

2.3 STATES

2.3.1 The States within the ICAO EUR Region are responsible for their national 8.33 kHz implementations and for the amendments of their respective regulations.

2.3.2 Advance notification to airspace users is provided by States via the publication of an Aeronautical Information Circular (AIC) – (refer to State Action 2 in section 12.2 and to specimen AIC in Annex C).

2.3.3 The individual States are required to amend their National Aeronautical Information Publications to reflect both the 8.33 kHz mandatory carriage requirements and the rules for handling State aircraft – (refer to State Actions 7 and 8 section 12.2 and to Specimen AIP text in Annex B).

2.4 SINGLE EUROPEAN SKY

2.4.1 EUROCONTROL has been mandated by the European Commission, in accordance with article 8(1) of the Framework Regulation (EC) No 549/2004, to develop requirements for the coordinated introduction of air-ground voice communications based on reduced 8.33 kHz channel spacing.

2.4.2 A draft Implementing Rule is being developed and submitted to the European Commission, for presentation to the Single European Sky Committee.

3 CARRIAGE REQUIREMENTS

This section considers the mandatory carriage requirement for 8.33 kHz channel spacing radio equipment, by the States enforcing the requirements and those States publishing exemptions. The requirements for State aircraft to equip with 8.33 kHz radios are also outlined.

3.1 AIRSPACE

3.1.1 In accordance with Eurocontrol Permanent Commission Recommendation 05/6, the carriage and operation of 8.33 kHz capable radio equipment is effective from 15 March 2007.

3.1.2 In order to create a homogeneous area of operations, an enforced mandatory carriage above FL195 is recommended, as a minimum, in those States that already enforce above FL245.

Hereinafter:

- Those States which enforce mandatory carriage above FL195 are referred to as 8.33 kHz States;
- Those States that do not enforce mandatory carriage above FL195 are referred to as Non-8.33 kHz States.

3.1.3 State aircraft are discussed at section 3.3.

3.1.4 States that grant exemptions for the carriage and operation of 8.33 kHz radio equipment above FL195 in their airspace should publish details in their AIP.

3.1.5 The recommended text for States publishing exemptions can be found at Annex B.

3.1.6 States granting exemptions may still need to take actions relating to: Operations (e.g. rerouting non-8.33 kHz equipped traffic); frequency management (e.g. shifting VHF assignments as required); retrofit (advising aircraft operators of the need to comply with 8.33 kHz equipage requirements in the ICAO EUR Region); and Letters of Agreement (e.g. amend the LoAs with neighbouring States as required).

3.2 AIRCRAFT EQUIPAGE

3.2.1 Aircraft operating above FL195 in the ICAO EUR region must be equipped with at least two sets of 8.33 kHz capable radio equipment to meet the relevant provisions of JAR/OPS of 1 April 1995 on Commercial Air Transport Aviation.

3.2.2 The inclusion of all equipment and capability information in an RPL is mandatory according to Amendment 200/2000 to the European Regional Supplementary Procedures Doc. 7030/4.

3.3 STATE AIRCRAFT POLICY

3.3.1 It is important to bear in mind that the handling of non-8.33 kHz equipped State aircraft leads to increases in ATC workload, and this needs to be taken into account in order to maintain safety levels.

3.3.2 Non-8.33 kHz equipped State aircraft may be handled above FL195, provided that they are UHF equipped, and the operational situation permits

3.3.3 A policy for State aircraft is at an advanced stage of development. The policy makes provision for State aircraft flying as GAT above FL195 to be equipped by the end of a transition period, expected to be 2009 and with exemptions limited to justified exceptional circumstances. For “transport type” State aircraft, the proposed equipage date is by July 2008.

3.3.4 It is intended that the State aircraft policy be submitted for approval to both the EUROCONTROL Provisional council by end 2006 and to the European Commission through the draft “Implementing Rule on Air-Ground Voice Channel Spacing”, currently under development.

3.3.5 Air Navigation Service Providers providing services in the airspace above FL195 are expected to make appropriate arrangements to handle the remaining non-8.33 kHz State aircraft, provided that they can be safely handled within the capacity limit of the ATM system on UHF or 25 kHz assignments.

3.3.6 For the definition of State Aircraft, please refer to Annex F, Handling State Aircraft.

4 8.33 FLIGHT PLANNING

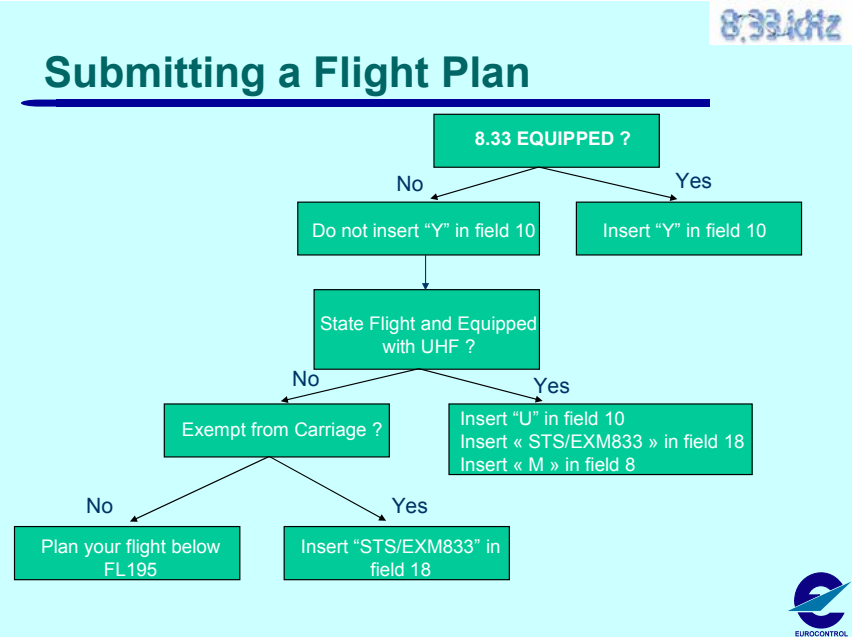
This chapter on flight planning covers: flight planning procedures, Flight Plan Messages (FPL) and Repetitive Flight Plans (RPL); the Integrated Initial Flight Plan Processing System (IFPS) procedures and processes, including compliance and non-compliance checks, for 8.33 kHz equipped or non-8.33 kHz equipped aircraft.

4.1 FLIGHT PLANNING PROCEDURES

4.1.1 Do not plan your flight in the ICAO EUR Region above FL195, if the aircraft is not equipped with 8.33 kHz capable radios, unless your flight is subject to exemption (section 3.1 of this User Guide).

4.2 FPL

4.2.1 Flight Planning Messages – FPL



4.2.2 If your aircraft is equipped with 8.33 kHz capable radios: insert the letter 'Y' in Field 10 of the filed flight plan, regardless of the requested flight level.

4.2.3 If your aircraft is NOT equipped with 8.33 kHz capable radios but you are a State aircraft equipped with UHF: insert the letter M in field 8, the letter U in field 10 and the indicator 'STS/EXM833' in Field 18 of the filed flight plan.

4.2.4 If your aircraft is NOT equipped with 8.33 kHz capable radios but your flight is exempted from the carriage requirement: insert the indicator 'STS/EXM833' in Field 18 of the filed flight plan.

4.2.5 If you change from an 8.33-equipped aircraft to a non-8.33 equipped aircraft: follow the applicable filed flight plan modification procedure, including in the modification message (CHG) or new flight plan, as appropriate, a Field 10 without the letter 'Y'. Do not forget to modify also your requested cruising level(s) if the original level(s) was (were) higher than FL195

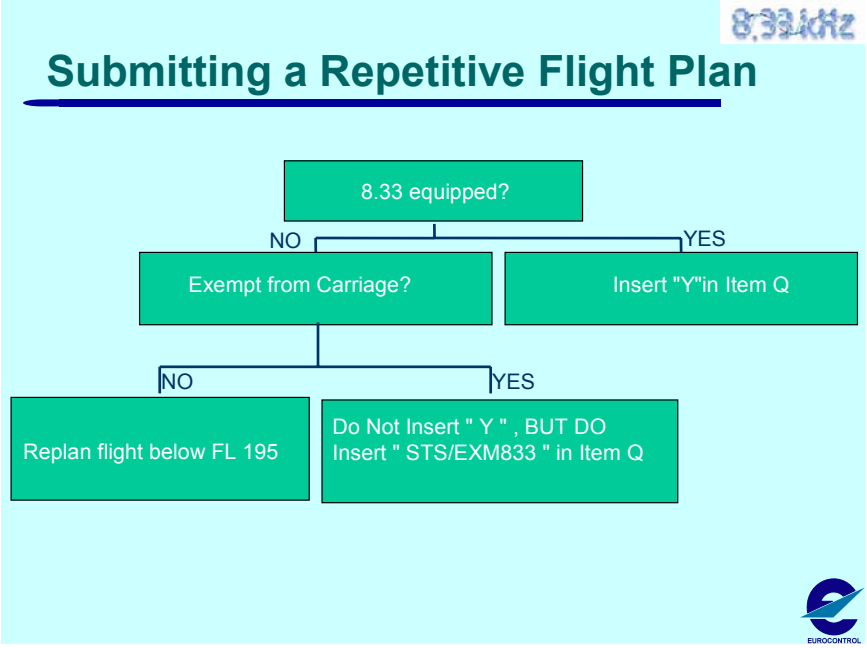
4.2.6 If the status of your flight changes from non-exempted to exempted follow the applicable filed flight plan modification procedure, for a Field 18 modification, as given in the IFPS Users Manual.

4.2.7 If the status of your flight changes from exempted to non-exempted: follow the applicable filed flight plan modification procedure, for a Field 18 modification, as given in the IFPS User Manual. Do not forget to modify also your requested cruising level(s) if the original level(s) was (were) higher than FL195.

Note: Medical and Hospital Flights are covered in section 5.4.

4.3 RPL

4.3.1 Repetitive Flight Planning - RPL



4.3.2 RPLs with a requested cruising level above FL195 must be operated by an 8.33 equipped aircraft, or the flight must be planned in accordance with published exemptions.

4.3.3 In RPL of flights that are operated with an 8.33 kHz equipped aircraft, include the letter ‘Y’ in Item Q within the EQPT/ element.

4.3.4 In RPL of flights that are subject to exemption, include in Item Q the indicator ‘STS/EXM833’.

4.3.5 For a flight planned to operate in the ICAO EUR Region above FL195, if there is no letter ‘Y’ in the EQPT/ element and no ‘STS/EXM833’ in Item Q, the RPL will fail the processing.

4.3.6 If on the day of operation there is a change in the 8.33 kHz capability status or exemption status of the flight, use the RPL modification-for-the-day procedure, including in the modification message (CHG-to be sent not earlier than 20 hours prior to EOBT) or the new flight plan, as appropriate, a Field 10 without the letter ‘Y’. Do not forget to modify also your requested cruising level(s), if required.

4.3.7 Example: A flight plan has been filed for an equipped aircraft above FL195. It is then realised that the aircraft will not be equipped. It is not sufficient to send a CHG simply indicating a change to the equipment without also indicating the necessary change to the requested flight level and/or route.

4.3.8 In all cases, if a Modification Message (CHG) would result in changes to the filed or repetitive flight plan which would constitute a reason for the rejection of that flight plan, the Modification Message will be rejected by the IFPS. It is therefore essential to indicate ALL the modifications that are required in order to reflect a valid flight plan.

4.4 RPL SUBMISSION

4.4.1 Please note that RPLs listings submitted after the 4th October 2001 are no longer assumed to be 8.33 kHz radio equipped.

4.4.2 All information which is relevant to 8.33 kHz processing must be provided in the RPLs submitted to CFMU in the form of a NLST (New List) or RLST (Revised List) from 4th October 2001 onwards.

4.4.3 8.33 kHz equipped aircraft shall include under the EQPT/ element in Item Q of the RPL the letter 'Y' together with ALL other equipment and capability information. The data provided shall be the complete information in Field 10 type of format e.g. EQPT/SHRYX/C (see also IFPS Users Manual). Each FPL generated from an RPL will contain in Field 10 the equipment information as provided after the EQPT/ element in the corresponding RPL.

4.4.4 In appropriate cases, the exemption indicator (STS/EXM833) shall be provided in Item Q of the RPL. Each FPL generated from the RPL will contain the exemption indicator in Field 18.

4.4.5 An RPL for a flight which is above FL195 within the IFPZ and which does NOT contain either the exemption indicator or the letter 'Y' within the EQPT/ element will fail RPL processing.

4.5 IFPS PROCEDURES

Error! Objects cannot be created from editing field codes.

4.6 '8.33 NON-COMPLIANCE' CHECK

4.6.1 IFPS will deem a flight plan to be '8.33 non-compliant' when:

I. at least a part of the flight is inside the IFPS Zone and above FL195, but the aircraft is not equipped with 8.33 radios (no 'Y' in Field 10) and the flight is not planned in accordance with published exemptions (no 'STS/EXM833' in Field 18)
II. the flight penetrates an 8.33 sector and:

- **EITHER** : the aircraft is not equipped with 8.33 radios (no 'Y' in Field 10) ;
- **OR** : the aircraft is a State aircraft, but is not equipped with either 8.33 radios or UHF radios (no 'Y' or 'U' in Field 10);
- **OR** : the aircraft is a non-8.33 equipped State aircraft (no 'Y' in Field 10), which is equipped with UHF radios ('U' in Field 10) but the sector concerned does not allow the use of handling of UHF equipped aircraft.

4.7 IFPS 8.33 PROCESSING

4.7.1 Flight plans which are deemed to be 'non-8.33 compliant' will fail IFPS processing. The resultant action by the IFPS depends upon the aerodrome of departure as follows:

4.7.2 Aerodrome of departure is inside the IFPS Zone:

=>FPL rejected
=>REJ message returned to the FPL originator and/or aircraft operator

e.g.:

-TITLE REJ -MSGTYP IFPL-FILTIM 150022 -ORIGINDT 0607150024
-BEGIN -ADDR
-FAC SVMIZPZX
-END -ADDR
-**ERROR PROF: FLIGHT PLAN DOES NOT COMPLY WITH 8.33kHz CARRIAGE REQUIREMENTS**
-OLDMSG (FPL-VIA745-IS
-DC10/H-SDHIX/C
-LEMD0150
-N0499F209 CCS UG7 ESP/N0479F350 DCT KOMUT/N0474F330 DCT 38N020W 36N030W 33N040W
27N050W 18N060W/M082F330 DCT PPR UA550 TOROP DCT DARPA DCT
-SVMI0727 SVTP
-EET/LECM0035 LPPC0115 020W0241 030W0350 LPPO0445 050W0536 KZNY0602 TTZP0649 REG/YV138C SEL/CFLM)

4.7.3 Aerodrome of departure is outside the IFPS Zone:

=>FPL marked as non-compliant and distributed to the ATC Units concerned, with IFP/NON833 added in field 18,

e.g.:
(FPL-VIA744-IS
-DC10/H-SDHIX/C
-SVMI0150
-N0499F209 DCT DARPA DCT TOROP UA550 PPR DCT 18N060W/M082F330 27N050W 33N040W 36N030W 38N020W DCT KOMUT/N0474F330 DCT ESP N0479F350 UG7 CCS TLD1DA
-LEMD0727 LEBL LPPR
-EET/TTZP0035 KZNY0115 050W0241 LPPO0350 030W0445 020W0536 LPPC0602 LECM0649 REG/YV138C SEL/CFLM IFP/NON833 DOF/060712)

=> ACK message returned to the FPL originator and/or aircraft operator including a warning indication

e.g.:
-TITLE ACK -MSGTYP IFPL -FILTIM 150600 -ORIGINDT 0607150602
-BEGIN ADDR -FAC KTULAALD -END ADDR
-IFPLID AA00840418
-COMMENT THIS FLIGHT PLAN DOES NOT COMPLY WITH 8.33 KHZ RADIO REQUIREMENTS
-MSGTEXT (FPL-AAL136-IS
-B767/H-SDHIX/C
-KLAX0110
-N0460F330 LOOP9 DAG J100 BCE ..... 56N010W/N453F370 UN561 BEL UB3 HON
-EGLL1026
-EET/CZWG0327 CZYZ0357 CZUL0419 CZQX0600 ..... DOF/060716)

4.8 IFPS PROCESSING FROM 00.00 UTC ON 26 OCTOBER 2006 UNTIL 23.59 UTC ON 15 MARCH 2007

4.8.1 For flights with an estimated off block time during this period, IFPS will issue warning messages for exempted non-8.33 equipped aircraft filing between FL195 and FL245 in the 8.33 States. Flight plans for such flights will NOT fail IFPS processing if they are properly filed based on the exemptions applicable up to 15 March 2007.

4.8.2 A flight plan for an exempted flight of a non-8.33 equipped aircraft, filing to operate between FL195 and FL245 in the 8.33 States, will continue to be processed and will be distributed by IFPS as usual. However, the ACK message that is returned to the originator of the flight plan and/or to the aircraft operator will contain a warning indication.

e.g.:
-TITLE ACK -MSGTYP IFPL -FILTIM 150600 -ORIGINDT 0607150602
-BEGIN ADDR -FAC LIRFAZAW -END ADDR
-COMMENT FLIGHT PLAN MAY BE REJECTED IF FILED AFTER 14/03/2007 DUE TO 8.33 KHZ RADIO REQUIRMENTS
-IFPLID BB24836140
-MSGTXT (FPL-AZA8953-IS
-PAY3/L-SD/C
-LIPY1100
-N0277F230 LEONN UA15 BOL UZ800 TAQ UZ801 VALMA UG23 ALG
-LIEA0105 LIRA LIEE
-EET/LIRR0002 STS/EXM833 DOF/060715 ORGN/LIRFAZAW)

4.9 8.33 STATUS UNKNOWN

4.9.1 The IFPS functionality includes the processing of certain messages which concern an aircraft already in flight. As the aircraft is already flying, IFPS does not reject such messages. The following are the messages and scenarios concerned:

- ATC Flight Plan Proposal Message (AFP) - created by an ATC unit and sent to IFPS when the ATC unit has received estimate information concerning an aircraft for which it had no flight plan or when a change to an already received flight plan occurs;
- Flight Notification Message (FNM) & Message from Shanwick (MFS) - co-ordination messages concerning eastbound North Atlantic flights;
- Air Filed Flight Plans (AFIL) - flight plan filed with an ATS Unit while the aircraft is in the air.

The 'downstream' ATC Units will receive an ATC Flight Plan (APL) message or an ATC Flight Plan Change (ACH) message, as appropriate, and in case of an air filed flight plan, a FPL message.

4.9.2 If the information received by IFPS does not show either the carriage of 8.33 compatible radio equipment ('Y' in Field 10) or an exemption (STS/EXM833 in Field 18), then IFPS will insert a warning indicator in Field 18 of the output message as follows:

IFP/833UNKNOWN

4.10 RE-ROUTING

4.10.1 The aircraft operator is always responsible for ensuring that the information provided in the flight plan (i.e. 8.33 kHz equipage information or the presence of the exemption indicator) is consistent with the aircraft to be used, the route to be flown and the requested cruising levels.

4.10.2 Re-routing proposals (RRP Messages) received from the CFMU Enhanced Tactical Flow Management System will NOT take into consideration 8.33 kHz exemption requirements. However if an alternative route, which would render the aircraft '8.33 non-compliant', is accepted by the Aircraft Operator, the re-filed flight plan will fail IFPS processing.

4.11 OCCASIONS WHEN IFPS WILL NOT BE ABLE TO PROVIDE ATC WITH PRIOR WARNING OF NON-EQUIPPED AIRCRAFT PLANNED TO ENTER THE AIRSPACE OF MANDATORY CARRIAGE

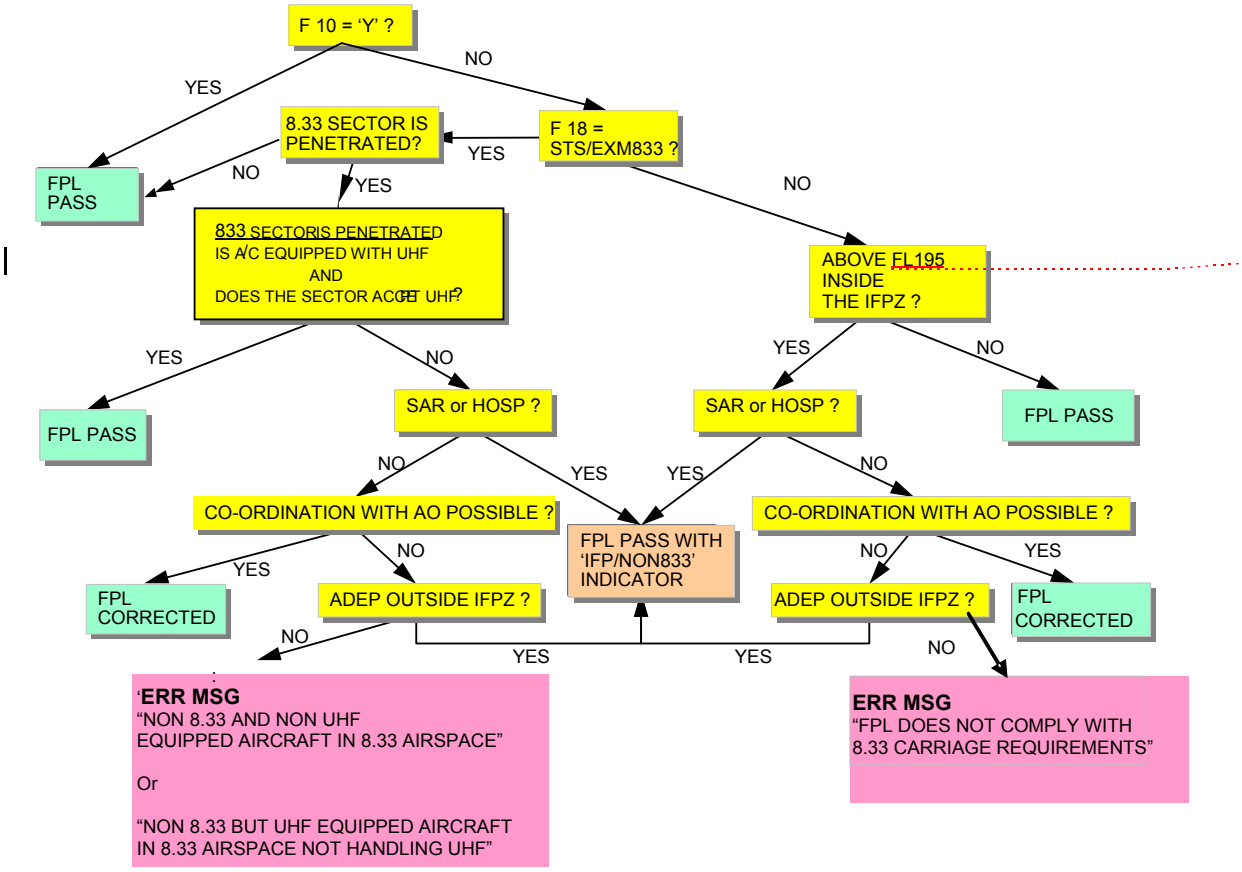
4.11.1 IFPS will not add a warning indicator to a flight plan which it does not distribute. This means that a warning will only be added to flight plans addressed to units outside the IFPZ, if the flight plan has been submitted to IFPS for group addressing. Therefore, if your sector is outside the IFPZ and you receive a flight plan not distributed by IFPS, you will have no additional indicator (other than the information available in Fields 10 and 18 of the FPL), that a particular aircraft is not equipped and extra care must be taken when transferring aircrafts to sectors within the IFPS Zone.

4.12 FLIGHT PLANNING PROCEDURES FOR AIRCRAFTS WITH REQUESTED CRUISING LEVEL BELOW FL195

4.12.1 Aircraft normally capable of operating above FL195, but planning to fly below these levels, shall, nevertheless, insert the appropriate indicator.

4.12.2 Irrespective of the RFL, it is essential that field 10 of the FPL accurately reflects the 8.33 equipage of the aircraft, and therefore the letter 'Y' shall be inserted in field 10 of the flight plan for aircraft equipped with 8.33 kHz capable radio equipment, and omitted for non-8.33 equipped aircraft.

4.13 FLOWCHART DESCRIBING IFPS CHECKING LOGIC FOR 8.33 kHz



5 OPERATIONAL ASPECTS

The chapter outlines the general operational aspects for 8.33 kHz equipped and non-8.33 kHz equipped flights, the communication procedures associated with 8.33 kHz, the handling of non-8.33 kHz State aircraft flights along with how the Medical & Search and Rescue Missions are treated.

5.1 GENERAL

5.1.1 The pilot is ultimately responsible for ensuring that the radio communication equipment appropriate for the flight to be conducted is available and operational on board the aircraft.

5.1.2 To ensure successful operation and safe conduct of air/ground communication within the 8.33 kHz environment, it is essential those ATC units with sectors operating in the 8.33 kHz channel spacing, and the ATC units adjacent to them co-operate effectively.

5.1.3 Tactical re-routing and/or descent below 8.33 kHz sectors of non-8.33 kHz equipped aircraft are not necessarily an option in a complex and busy airspace. Unplanned diversion may be the only alternative, particularly where the route network below FL195 is different to that at higher levels.

5.1.4 Providing that no exemptions are applicable, ATC units controlling adjacent or subjacent airspace, must ensure that aircraft not properly equipped do not enter airspace in which the carriage and operation of 8.33 kHz capable radio communication equipment is mandatory. Within and between ATC units, agreements must be made to meet this requirement. Appropriate arrangements must also be made for the handling of State aircraft. (A specimen Letter of Agreement is provided at Annex E)

5.1.5 As previously described in this User Guide (Chapters 4 refers), the IFPS will provide a degree of protection against improperly equipped aircraft planned to operate above FL195 in the ICAO EUR Region by rejecting their flight plans if the aerodrome of departure is within the IFPS Zone (hereafter IFPZ) (see Figure 5.1 below), or by inserting a warning in the flight plan if the aerodrome of departure is outside the IFPS Zone (see Figure 5.2 below).

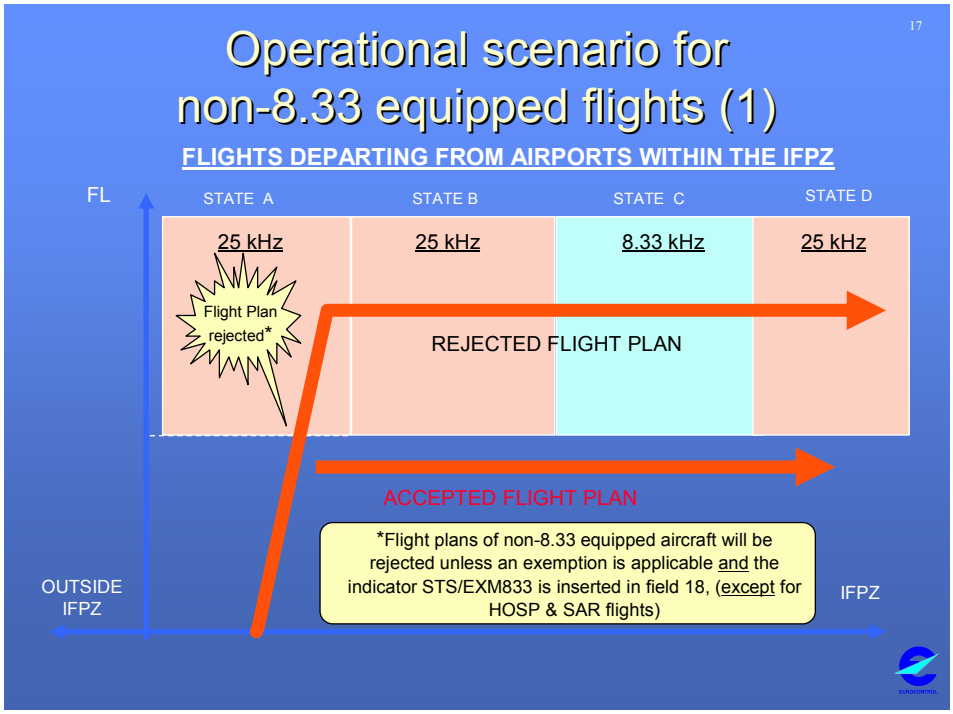

17
Operational scenario for non-8.33 equipped flights (1)
FLIGHTS DEPARTING FROM AIRPORTS WITHIN THE IFPZ
FL
STATE A
STATE B
STATE C
STATE D
25 kHz
25 kHz
8.33 kHz
25 kHz
Flight Plan rejected*
REJECTED FLIGHT PLAN
ACCEPTED FLIGHT PLAN
*Flight plans of non-8.33 equipped aircraft will be rejected unless an exemption is applicable and the indicator STS/EXM833 is inserted in field 18, (except for HOSP & SAR flights)
OUTSIDE IFPZ
IFPZ

Figure 5.1

Error! Objects cannot be created from editing field codes.

Figure 5.2

5.1.6 As previously described in this User Guide (Section 4.8 refers), for a period of time in advance of 15 March 2007, the IFPS will issue warning messages for exempted non-8.33 kHz equipped aircraft filing above FL195 in the 8.33 kHz States.

5.2 COMMUNICATIONS PROCEDURES

5.2.1 **Revised R/T procedure – 6 digits for 8.33 kHz AND 25 kHz channels**

5.2.2 The radiotelephony communication procedures shall be in accordance with ICAO SARPS Annex 10, Volume II, Chapter 5. Flight crew, ATS personnel and other ground personnel shall be thoroughly familiar with the radiotelephony procedures contained therein.

5.2.3 The introduction of 8.33 kHz channel spacing has resulted in a 6-digit channel numbering scheme, where the 8.33 kHz channel designators differ from the actual frequency; e.g. 8.33 kHz channel 132.035 tunes the frequency 132.0333 MHz.

5.2.4 Amendment 80 to Volume II, Annex 10 became applicable on 24 November 2005: it introduced a procedure for a 6-digit pronunciation of both 8.33 kHz and 25 kHz channels in VHF radio telephony communications, except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits should be used; the use of the term “CHANNEL” in conjunction with 8.33 kHz channels will be discontinued. The following examples illustrate the application of this procedure:

Channel (8.33 kHz/25 kHz)	Transmitted as
118.000 (25 kHz)	ONE ONE EIGHT DECIMAL ZERO
118.005 (8.33 kHz)	ONE ONE EIGHT DECIMAL ZERO ZERO FIVE
118.010 (8.33 kHz)	ONE ONE EIGHT DECIMAL ZERO ONE ZERO
118.025 (25 kHz)	ONE ONE EIGHT DECIMAL ZERO TWO FIVE
118.100 (25 kHz)	ONE ONE EIGHT DECIMAL ONE

It is essential that pilots READBACK the channel number in full, and that controllers verify that the pilot has correctly understood.

5.2.5 **Radio configuration – 8.33 kHz mode**

5.2.6 Some radio types can be configured for 8.33 kHz channel spacing operations, for example by using a mechanical toggle switch or by reprogramming. When operating in a 25 kHz only mode, such radios will not enable 8.33 kHz channels to be selected and may only display 5 digits.

5.2.7 In such cases, caution must be exercised to ensure that the radio is configured for 8.33 kHz channel spacing operations.

5.2.8 *Note: Situations may arise outside of the airspace of mandatory carriage where an aircraft is equipped with a 25 kHz only capable radio and a 5-digit radio control panel, and the pilot receives a communication transfer in 6 digits. In such cases, caution must be exercised to ensure that the first five digits are tuned correctly; for example, being instructed to change to 132.025 would require setting of 132.02 in a 5-digit radio com box*.

5.2.9 8.33 kHz and UHF Status: Phraseology

5.2.10 To mitigate against the risk of a non-8.33 kHz compliant aircraft, air traffic controllers must know the 8.33 kHz equipage status of aircraft under their control. In the event that an aircraft is not 8.33 kHz compliant, this will usually be indicated on the flight progress strip and/or the radar track label. Should the ATC be uncertain about the **8.33 kHz equipage status** of any aircraft or the **UHF status of a State aircraft**, then the following phraseology applies.

Circumstance	Phraseology
To request confirmation of 8.33 kHz capability	CONFIRM EIGHT POINT THREE THREE
To indicate 8.33 kHz capability	* AFFIRM EIGHT POINT THREE THREE
To indicate lack of 8.33 kHz capability	* NEGATIVE EIGHT POINT THREE THREE
To request UHF capability	CONFIRM UHF
To indicate UHF capability	* AFFIRM UHF
To indicate lack of UHF capability	NEGATIVE UHF
To request status in respect of 8.33 kHz exemption	CONFIRM EIGHT POINT THREE THREE EXEMPTED
To indicate 8.33 kHz exempted status	*AFFIRM EIGHT POINT THREE THREE EXEMPTED
To indicate 8.33 kHz non-exempted status	* NEGATIVE EIGHT POINT THREE THREE EXEMPTED
To indicate that a certain clearance is given because otherwise a non-8.33 equipped and/or non-exempted aircraft would enter the airspace of mandatory carriage	DUE EIGHT POINT THREE THREE REQUIREMENT

* Denotes pilot transmission.

The above phraseology is currently approved by ICAO in the *Procedures for Air Navigation Services – Air Traffic Management* (PANS-ATM, Doc 4444)

5.3 HANDLING NON-8.33 KHZ EQUIPPED STATE AIRCRAFT

5.3.1 Air traffic service providers shall ensure that non-8.33 kHz equipped State aircraft can be accommodated, provided they can be safely handled within the capacity limits of the ATM system on UHF or 25 kHz VHF assignments.

5.3.2 States shall publish in their National AIP, their procedures for the handling of non-8.33 kHz equipped State aircraft operating above FL195.

5.3.3 If a State aircraft has neither UHF nor 8.33 capability, it must be denied entry into the airspace of mandatory carriage and must be (re)cleared outside such airspace.

5.3.4 ATS personnel are expected to ascertain on first contact the communications capabilities of State aircraft planned to operate in the airspace of Mandatory Carriage.

5.3.5 UHF frequencies are managed by NATO according to NATO Frequency Management criteria, based on States needs. NATO co-ordination is applicable to both Members of NATO and members of the Euro-Atlantic Partnership Council.

5.4 MEDICAL FLIGHTS AND FLIGHTS ON SEARCH AND RESCUE MISSIONS

5.4.1 Medical flights specifically declared by the medical authorities, and aircraft engaged in search and rescue missions, are not exempt from the 8.33 kHz mandatory carriage requirement. However, due to the frequently urgent nature of these flights, they are subject to a special IFPS processing.

5.4.2 To ensure the correct processing of the flight plan, HOSP and SAR flights are required to insert STS/HOSP and STS/SAR, as appropriate, in Field 18 of the flight plan. Flight plans containing either of these indicators will not be rejected by IFPS, even if there is no 'Y' in Field 10 to indicate 8.33 kHz equipage, and the aircraft is planned to enter airspace where no exemption is applicable.

5.4.3 Nevertheless, you should insert the letter 'Y' in Field 10, if the aircraft is equipped with 8.33 kHz capable radios, because this will prevent IFPS including a warning in the flight plan it distributes, and will avoid unnecessary questions from ATC.

5.4.4 The above measures have been implemented to ensure that the processing of flight plans of SAR and HOSP status flights, which are often composed and filed with considerable urgency and hence are prone to unintentional errors, is not delayed unnecessarily.

5.4.5 The communication capability of HOSP or SAR flights which have failed to indicate them, and which are planned to operate in airspace where the carriage and operation of 8.33 kHz radios is mandatory, must be verified by ATC as soon as possible. At the latest, ATC in the 25 kHz sector immediately before an 8.33 kHz sector should verify, on first contact, the 8.33 kHz status of such aircraft.

5.4.6 It is likely that a limited number of HOSP/SAR flights may also be State aircraft equipped with UHF. In this case, the flight may qualify for the exemption applicable to State aircraft, where UHF is available, and operators may insert 'STS/EXM833' in Field 18, 'U' in Field 10 and 'M' in Field 8. The aircraft will then be handled as a UHF equipped State aircraft.

5.4.7 It is important to note that HOSP and SAR flights are not exempt from the 8.33 kHz radio mandatory carriage requirement, and a non-8.33 kHz and non-UHF equipped HOSP or SAR flight will be handled clear of airspace where no exemption applies.

6 CO-ORDINATION

The chapter considers the ATC co-ordination, including operational requirements for system support and the main ATC procedures, for the handling of 8.33 kHz and non-8.33 kHz equipped aircraft within the Airspace of Mandatory Carriage and for sectors adjacent to them.

6.1 GENERAL

6.1.1 It is the pilot who is ultimately responsible for ensuring that the radio communication equipment appropriate to the flight to be conducted is fitted and operational on board the aircraft (refer section 4.1.1).

6.1.2 Nevertheless, there will be an operational impact on ATC, particularly for sectors that accept non-8.33 equipped aircraft but are immediately adjacent to sectors where no exemption to the 8.33 kHz mandatory carriage requirement is permitted.

6.2 ATC SYSTEMS SUPPORT

6.2.1 It is essential that information regarding 8.33 status of relevant aircraft is displayed to ATC. This information is available from the flight plan. In particular, if an aircraft with an aerodrome of departure outside the IFPS Zone has failed to indicate in the flight plan that it is carrying radio equipment appropriate for the planned route, a warning will be added to the flight plan Message distributed by the IFPS. This warning indicates that the aircraft is not 8.33 equipped, and that special care must be taken. It is essential that the information that an aircraft is not 8.33 equipped (whether or not this information is distributed by IFPS), is displayed to ATC. This means that, as a minimum, Field 10 must be processed by the ACC. If possible, Field 18 should also be processed. State aircraft equipped with UHF need to be identifiable, because these are the only non-8.33 equipped aircrafts permitted to enter an 8.33 sector.

6.2.2 Listed below are the agreed operational requirements for systems support to 8.33 kHz operations:

A. ATC systems should indicate to controllers the relevant 8.33 kHz equipage status of an aircraft.

Note that this can be achieved through the flight progress strip or through the radar track/label. There is no requirement to indicate it on both.

B. For non-8.33 kHz equipped State aircraft, ATC systems should indicate to controllers whether or not the aircraft is UHF equipped.

Note that non-833 kHz equipped State Aircraft are exempted only if they are UHF equipped.

C. The possibility to change the 8.33 kHz equipage status should be provided to controllers.

This capability caters for flight plan errors.

D. System notification and co-ordination data should include the current 8.33 kHz equipage status of an aircraft, and, for not equipped State Aircraft, indicate whether or not the aircraft is UHF equipped.

E. The Eurocontrol OLDI Standard (Released Edition 2.2) has been amended to include indication of (inter alia) 8.33 and UHF equipment (as specified in field 10) as well as the current capability and status of the equipment (equipped and available/ not equipped or not available/ unknown).

The capability and status field may be updated by ATS if the information in the flight plan is found to be incorrect. Inclusion of Field 18 STS/ information is optional and subject to bilateral agreement of the States concerned.

6.3 ATC PROCEDURES

The following ATC procedures have been applied since 1999 above FL245 and will be applied above FL195 from 15 March 2007.

6.3.1 If your sector is outside the Airspace of Mandatory Carriage:

6.3.1.1 If your sector is not adjacent to any sector within the Airspace of Mandatory Carriage, no additional action is required.

6.3.1.2 If your sector is adjacent to a sector which is within the Airspace of Mandatory Carriage, but which allows unconditional exemption to non-equipped aircrafts, no additional action is required.

6.3.1.3 If your sector is adjacent to a sector which is within the Airspace of Mandatory Carriage, but allows exemption to specified non-equipped aircrafts, you must be sure of the aircraft's radio capability or compliance with the conditions for exemption before transfer of control to that sector. A non-equipped aircraft must operate in accordance with the specific conditions for exemption applicable within the next sector and if it does not, an alternative clearance must be co-ordinated.

6.3.1.4 If your sector is adjacent to a sector which is within the Airspace of Mandatory Carriage within which flight of non-equipped aircraft is not permitted (i.e. no exemptions are applicable except to UHF equipped State aircraft), you must be sure of the aircraft's 8.33 kHz or UHF radio capability before transfer of control to that sector, and if it is not appropriate, you must co-ordinate an alternative clearance

6.3.2 If your sector is within the Airspace of Mandatory Carriage and no flight of non-equipped aircraft is permitted within your sector (You may or may not be operating a frequency within the 8.33 kHz spectrum).

6.3.2.1 You do not need to confirm the 8.33 kHz or UHF capability of any aircraft within your airspace. This will have been done by preceding sectors. All aircraft within your airspace must be properly equipped. You need to be aware, however, that there is a slight possibility of severe interference caused by aircraft which are not properly equipped, communicating with another 8.33 kHz sector using a 25 kHz frequency.

6.3.3 If your sector is within the Airspace of Mandatory Carriage, but specified flights of non-equipped aircraft are permitted within your sector.

6.3.3.1 You should only receive aircrafts from adjacent sectors which are in accordance with the carriage and exemption requirements of your sector.

6.3.3.2 If your sector is adjacent to a sector within the Airspace of Mandatory Carriage which allows exemption to specified non-equipped aircraft, you must be sure of the aircraft's 8.33 or UHF radio capability or compliance with the conditions for exemption before transfer of control to that sector. A non-equipped aircraft must operate in accordance with the specific conditions for exemption applicable within the next sector and if it does not, an alternative clearance must be co-ordinated.

6.3.3.3 If your sector is adjacent to a sector within the Airspace of Mandatory Carriage within which flight of non-equipped aircraft is not permitted (i.e. no exemptions are applicable apart from UHF equipped State aircraft), you must be sure of the aircraft's 8.33 or UHF radio capability before transfer of control to that sector, and if it is not appropriate, you must co-ordinate an alternative clearance.

7 FREQUENCY MANAGEMENT ASPECTS

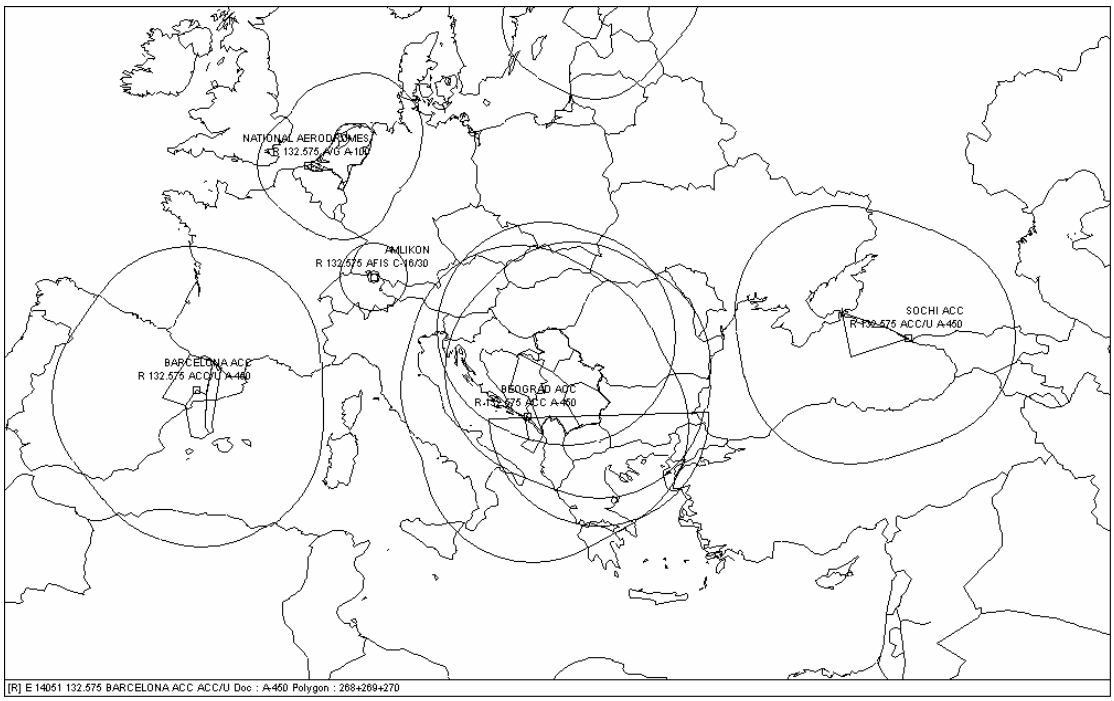
7.1 VHF CONGESTION

7.1.1 In line with increases in air traffic levels – which are predicted to double by 2020 in comparison to the year 2000 – there has been an increase in the demand for operational improvements like re-sectorisation. This, in turn, has led to an increase in the demand for VHF assignments in the aeronautical mobile radio communication service band 118 to 137 MHz. At the time of writing, there are about 11,000 VHF assignments in the band 118-137 MHz

7.2 FREQUENCY MANAGEMENT

7.2.1 The same frequency can be reused many times provided that there is no harmful interference. The Frequency Management Group (FMG), a sub-group of the ICAO EANPG, maintains the rules to be applied by national frequency managers to ensure that all allocated VHF assignments can coexist in the limited VHF band between 118 and 137 MHz.

7.2.2 In the case of Area Control Centre (ACC) services, protection criteria based on the radio horizon are used. For example, in the case of an upper airspace sector with a ceiling at FL450, the radio horizon is calculated to be 261 nautical miles (i.e. 1.23 multiplied by the square root of the height in feet). Therefore, if the same frequency were to be assigned to two such sectors (i.e. both having a ceiling at FL450), then the two sectors would need to be separated by a minimum of 522 NM. Less stringent criteria are used to protect other services – for example Tower and Ground services – which are referred to as 'circular services'.



7.2.3 The allocation of VHF assignments for aviation services is a national responsibility. When a sector designer needs to open a new sector, the frequency manager has to find a VHF assignment that does not interfere with existing assignments within the country or with neighbouring States.

7.2.4 The planning of VHF assignments is achieved in two ways. Firstly, the frequency manager uses the day-to-day planning process and tries to find a direct solution for a new VHF assignment. Secondly, in the event that no direct solution exists, the block planning process is

used to facilitate the shifting of VHF assignments, often with other States, in order to free-up a VHF assignment.

7.2.5 At a European level, it becomes more and more difficult to find new VHF assignments. Very often, there is a need to "shift" existing VHF assignments prior to the implementation of a new VHF assignment in a given State.

7.2.6 In order to facilitate this coordination, a bi-annual block-planning meeting of national frequency managers takes place under the auspices of the ICAO Frequency Management Group (FMG), a sub-group of the European Air Navigation Planning Group (EANPG). A tool developed by EUROCONTROL, Planif (Planification), is used to identify the best allocation of VHF assignments to satisfy the demands of the European ATM community. Often, allocating a VHF assignment in one State requires VHF assignments to be shifted elsewhere.

7.3 25 TO 8.33 KHZ CONVERSIONS

7.3.1 The introduction of 8.33 kHz channel spacing involves the conversion of a number of existing 25 kHz channels to 8.33 kHz channels (figure 7.1). An 8.33 kHz channel has a reduced bandwidth compared to its 25 kHz counterpart. This allows for the creation of two adjacent 8.33 kHz channels on the so-called "shoulder" frequencies (figure 7.2).

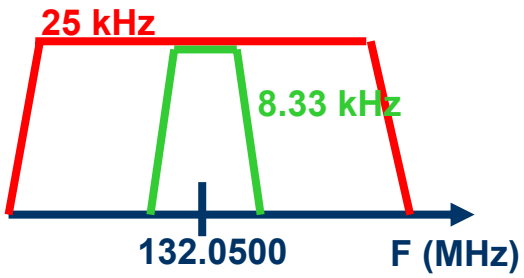


Figure 7.1: 25 to 8.33 kHz conversion

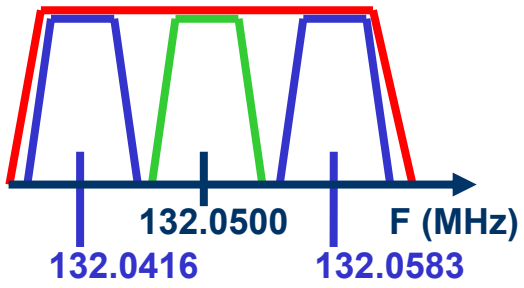


Figure 7.2: adjacent 8.33 kHz channels on shoulder frequencies

7.3.2 **The frequency planning benefits due to 8.33 kHz are driven by the number of 25 to 8.33 kHz conversions that can be achieved on the ground**. In practice, the number of conversions is constrained by:

(i) Sectors having a lower limit below the mandatory carriage level (FL245 since October 1999, and FL195 from 15 March 2007); and

(ii) Sectors in which climax (offset-carrier) operation is in use.

7.3.3 Climax systems are used where radio coverage is not achievable from a single ground site, such as in the case of very large sectors or in mountainous regions. To avoid interference

problems when two or more stations transmit on the same frequency, an offset-carrier system is used. For example, +/- 5 kHz offset in the case of a 2-station implementation.

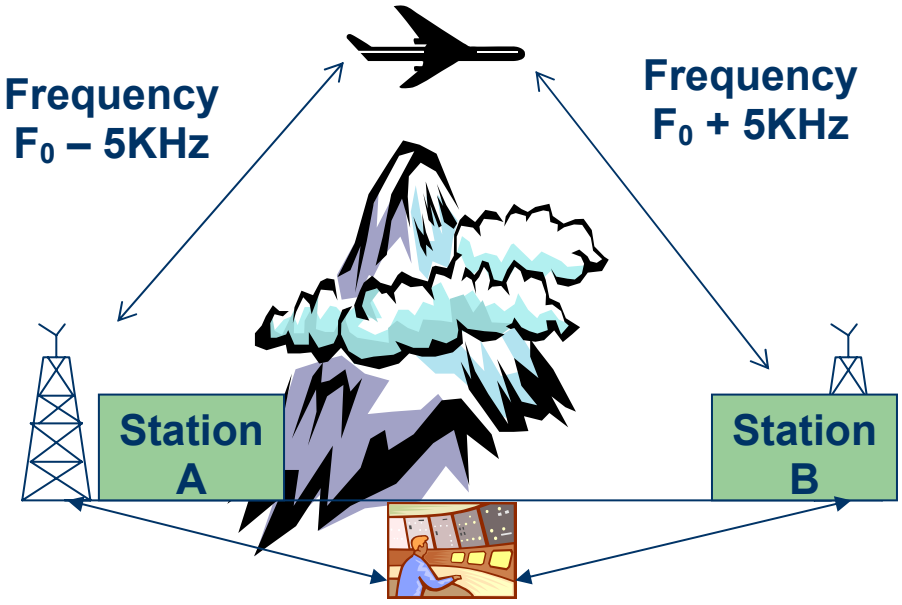


Figure 7.3: climax operation

7.3.4 At present, the use of climax systems is not compatible with 8.33 kHz channel spacing. Within the Eurocontrol Communications Domain, however, the feasibility of using an 8.33 kHz compatible climax system, based on 2 stations and +/- 2.5 kHz offset, is being assessed.

7.3.5 8.33 kHz channels have so far been implemented above FL245 in the airspace of 20 ICAO EUR Region States. This has required modifications to ground-based radios and, in a number of cases, has entailed significant infrastructure changes including the building of new radio sites. In addition to radio modifications, changes have been made to ATC displays and flight plan processing systems, principally to assist controllers in identifying potentially non-8.33 kHz compliant aircraft.

7.4 ABOVE FL195 CONVERSIONS

7.4.1 For the above FL195 phase, the bulk of the 25 to 8.33 kHz conversions will be implemented in France, Italy and UK, due to the fact that they have a number of sectors with a lower-limit between FL195 and FL245. These conversions are planned to take place in the 15 month period following the introduction of enforced mandatory carriage above FL195.

7.4.2 It is recommended that individual 25 to 8.33 kHz conversions are initially operated for a trial period of typically 3 months. This will allow any potential problems, such as interference on non-8.33 kHz equipped aircraft, to be identified.

7.4.3 Subject to the successful outcome of the trial period, the conversions can then be co-ordinated in the ICAO COM-2 table. **It is only at this stage that new 8.33 kHz channels can be co-ordinated on the freed shoulder frequencies**.

8 EQUIPMENT STANDARDS

The 8.33 kHz channel spacing standards and specifications have been approved by the following bodies – ICAO, EUROCAE, RTCA, AEEC and ETSI.

8.1 ACP / SARPS

8.1.1 The Aeronautical Communication Panel (ACP) working group M, maintains the Standards And Recommended Practices (SARPS). This includes 8.33 kHz Double Side Band (DSB) Amplitude Modulated (AM) carriers.

8.1.2 The Air Navigation Commission (ANC) and ICAO Council approved (November 1996) this new channel spacing as an amendment to Annex 10. It describes the characteristics of the 8.33 kHz ground and airborne systems.

8.2 EUROCAE / MOPS

8.2.1 On the airborne side, the European Organisation for Civil Aviation Equipment (EUROCAE) produced the relevant Minimum Operational Performance Standards (MOPS) document which was used by the Joint Aviation Authorities (JAA) for the certification of avionics.

8.2.2 ED-23B replaces the previous document ED-23A published in 1986, and incorporates changes which allow receivers and transmitters to be used in both a 25 kHz and 8.33 kHz channel separation environment. Includes Amendment no. 3 – 28 November 1997.

8.2.3 Please note that ED-23C is due for release in October 2006.

8.3 RTCA / MOPS

8.3.1 In addition the RTCA SC-172 agreed in 1995 to produce a MOPS for 8.33 kHz operation based on the EUROCAE MOPS. **DO-186B**, includes changes 1 and 2 made to DO-186A, and highlights standards and test procedures for airborne VHF communication transmitters as well as for installed equipment. The document sets equipment performance standards for offset carrier operations, including class A and C equipment, and defines an exclusion band for a radio frequency susceptibility test (DO-160 Section 20.0). The document also defines Class E transceivers, which are used in 8.33 kHz channel separation environments.

8.4 AEEC / ARINC 716 SUPPLEMENT

8.4.1 The Airlines Electronic Engineering Committee (AEEC) produced a supplement to ARINC 716 to cover the 8.33 kHz mode. ARINC 750 which specifies that the VDR provides the functionality of an AEEC 716 transceiver and hence covers the 8.33 kHz mode. A supplement for the 8.33 kHz mode to ARINC 716 was adopted at the AEEC General Session in October 1994.

8.5 ETSI / ETSI EN 300 676

8.5.1 Finally, 8.33 kHz channel specification is covered by the European Telecommunication Standardisation Institute (ETSI) in document ETSI EN 300 676 under “Electromagnetic compatibility and Radio spectrum Matters (ERM) - Ground-based VHF hand-held, mobile and fixed radio transmitters, receivers and transceivers for the VHF aeronautical mobile service using amplitude modulation”. Note that an updated version is due for release in September 2006.

9 AIRCRAFT RETROFIT

9.1 AIRCRAFT 8.33 KHZ RADIO REQUIREMENTS

9.1.1 In order to enter the 8.33 kHz airspace, aircraft must be equipped with two independent sets of 8.33 kHz radios.

9.1.2 ETSO-2C37e (Receiver) and ETSO 2-C38e (Transmitter) are the related EUROPEAN standards which are comparable with FAA TSO-2C37e and TSO-2C38e. Such general regulations describe the applicable MOPS (Minimum Operational Performance Specification) documents for transceivers. This includes ED-23B, ED-14D and ED-12B in case of transmitters and receivers, and the applicable issues of these documents.

9.2 AVAILABILITY OF 8.33 KHZ RADIOS/UPRADE KITS

9.2.1 8.33 kHz capable radios are available for Commercial and for General Aviation aircraft. Most of the avionics manufacturers have 8.33 kHz capable and equipment for sale. Upgrades are also available for some, but not all, older equipment.

9.3 RADIO RETROFIT PROCEDURES

9.3.1 The 8.33 kHz related retrofit effort depends on the class aircraft, the type of the VHF radio equipment currently installed, and on the general avionics concept (mainly analogue vs. digital and non-integrated/integrated avionics) of the particular aircraft. Thus, it may be required to

- Upgrade / configure the radio software; or
- Replace the radio control panel only (see Figure 9.1); or
- Upgrade the complete VHF radio; or
- Replace the complete VHF radio (see Figure 9.2).

9.3.2 Aircraft classes can be defined as follows:

- Light - piston and turboprop aircraft with takeoff mass of less than 5700 kg. e.g., Cessna 172, King Air C90B, or CJ1/2, Beech 1900, 2000; Dornier 228, SAAB 226, 227, …
- Small - jet and turboprop aircraft with takeoff mass greater than 5700 Kg and less than 15,000 kg, e.g., King Air 350, Learjet 4 and 5, most Citation aircraft; Dornier 328 and …
- Large - jet aircraft with takeoff mass greater than 15,000 kg, e.g., Citation X, Falcon Jets (F-50, F-2000, F900), Gulfstreams (G-IV, G-V), Bombardier CRJ, Embraer ERJ, ATR, all Airbus and Boeing aircraft.

Figure 9.1 Radio Control Panel

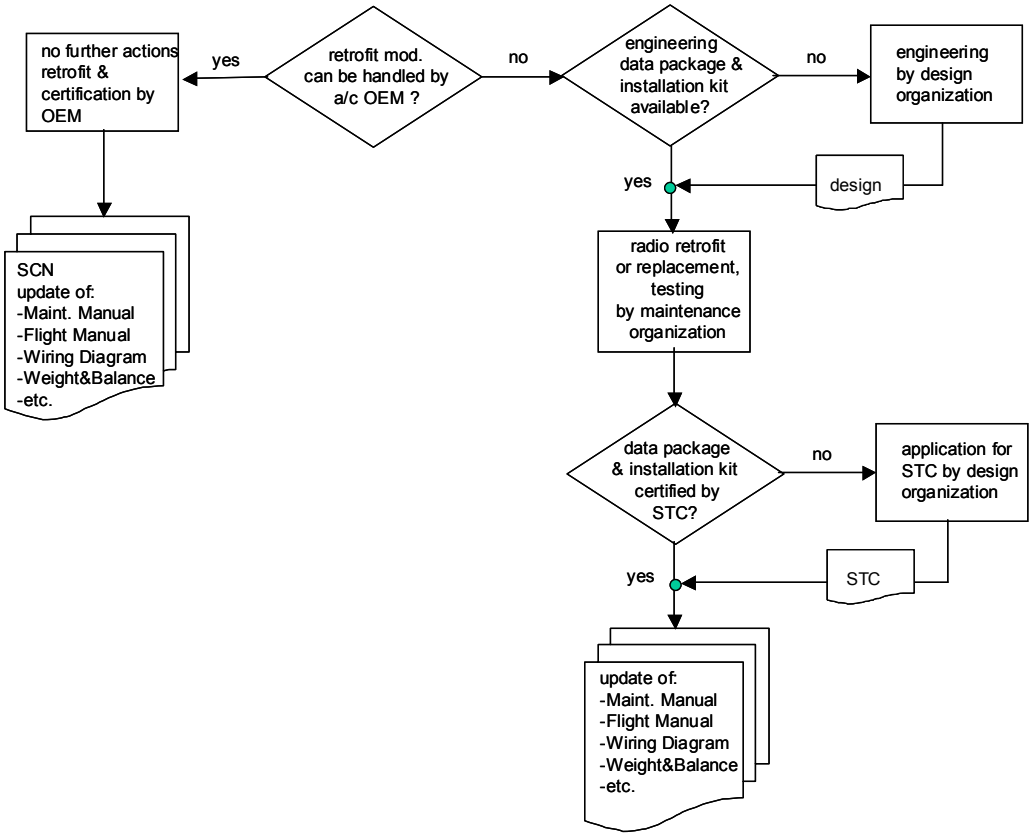
Figure 9.2 VHF radio transceiver

9.4 AIRCRAFT RE-CERTIFICATION

9.4.1 As for any other avionic retrofit, the installation of new radio components or the upgrade of existing radio components have to be certified for the particular make and model of the aircraft. This certification is typically done through an STC (Supplemental Type Certificate) or an SB (Service Bulletin).

9.4.2 Many radio manufacturers, airframe manufacturers, and maintenance organizations have already developed such STCs or SBs for a variety of aircraft types.

9.4.3 In case a STC is not yet available for a particular aircraft and the envisaged radio equipment, the maintenance/design organization in charge for the retrofit typically can assist to develop such an STC.


retrofit mod. can be handled by a/c OEM ?
yes
no further actions retrofit & certification by OEM
SCN update of: -Maint. Manual -Flight Manual -Wiring Diagram -Weight&Balance -etc.
no
engineering data package & installation kit available?
no
engineering by design organization
design
yes
radio retrofit or replacement, testing by maintenance organization
data package & installation kit certified by STC?
no
application for STC by design organization
STC
yes
update of: -Maint. Manual -Flight Manual -Wiring Diagram -Weight&Balance -etc.

9.4.4 The above diagram gives an overview on certification procedures if the above mentioned OEM solution of the radio OEM does not exist

10 SAFETY

The principal safety objective is to ensure that the 8.33 kHz above FL195 implementation achieves an acceptable level of safety. Therefore, in order to meet its principal safety objective, the risk of an accident due to the above FL195 implementation should not increase in relation to the above FL245 implementation.

10.1 SAFETY ACTIVITIES

10.1.1 The following activities have been defined to ensure the safe implementation of 8.33 kHz above FL195 in the ICAO EUR Region.

i) A safety assessment will be performed in compliance with ESARR4 (Risk Assessment and Mitigation in ATM) and executed in accordance with the EUROCONTROL Safety Assessment Methodology (SAM), Version 2.0, (SAF.ET1.ST03.1000-MAN-01.00).

ii) In accordance with the SAM, the safety assessment will be performed in three steps:

- Functional Hazard Analysis (FHA)
- Preliminary System Safety Assessment (PSSA)
- System Safety Assessment (SSA).

10.1.2 FHA/PSSA

10.1.2.1 An FHA and PSSA have been performed. The FHA identified potential safety hazards, and analysed them in order to assess the effect on operations and the severity of these effects. A set of safety objectives were then developed defining how safe the system would need to be. The PSSA then identified a set of credible safety requirements to ensure that the safety objectives could be met. This then comprised the set of actions needed to ensure the hazards would occur at an acceptable rate.

10.1.3 Pre-Implementation Safety Case

10.1.3.1 Prior to implementation, an SSA will be performed to verify that the safety requirements have been implemented in order to ensure that the safety objectives are satisfied. This will be documented in the Pre-Implementation Safety Case – taking into account the guidance in the Safety Case Development Manual Version (2.0) - which will contain the safety arguments necessary to determine whether the implementation of 8.33 kHz above FL195 can proceed as planned.

10.1.4 Post-Implementation Safety Case

10.1.4.1 Post implementation, the validity of the safety arguments in the Pre-Implementation Safety Case will be verified against operational experience gained during the actual implementation in order to ensure that the operations remain acceptably safe. This will be documented in the Post-Implementation Safety Case which will contain recommendations for further safety related action where necessary.

10.1.5 State Action Reports

10.1.5.1 States are requested to perform a national safety assessment in which they review the generic list of hazards and safety requirements (see below), and assess their applicability to the national environment. The results should be referred to in the State Action Report.

10.1.5.2 State Action Report should be produced by the States, submitted to the State Regulator as appropriate, and shall be summarised to form one section of the Pre-Implementation Safety Case. Refer to State Action 3 and 4.

10.2 HAZARDS

10.2.1 The Functional Hazard Assessment (FHA) performed for 8.33 kHz above FL195 has identified the following generic set of hazards:

1. A non-8.33 kHz compliant aircraft within an 8.33 kHz sector
The entry of a non-8.33 kHz compliant aircraft into an 8.33 kHz sector can lead to communication problems. The inability to tune to a 6-digit 8.33 kHz channel means that ultimately the pilot may not be able to communicate with the controller. If the pilot attempts to communicate on a 25 kHz channel, then there is a risk of interference on the adjacent 8.33 kHz channels.
2. Unplanned diversion of a non-8.33 kHz compliant aircraft around an 8.33 kHz sector
This hazard occurs when a non-8.33 kHz compliant aircraft is erroneously flight planned through an 8.33 kHz sector and the error is detected at a late stage. This hazard may result in additional controller workload, and the diversion itself may present a risk to other aircraft
3. Selection of wrong frequency by pilot
The selection of the wrong channel or “mistuning” is also a hazard for 25 kHz channels. For 8.33 kHz channels, addition of an extra digit and uncertainty about phraseology, may increase the risk of this hazard and may lead to communication problems, including additional pilot and controller workload.
4. Too many non-8.33 kHz State aircraft in an ACC with limited UHF capability
The current guideline is to handle non-8.33 kHz equipped State aircraft in the airspace of mandatory carriage, provided that they are infrequent users (less than 30 hours per year in the airspace) and they are UHF equipped. In practice, the handling of non-8.33 kHz equipped State aircraft can lead to increases in air traffic controller workload, and this needs to be taken into account in order to maintain safety levels. (Note: New policy under development – refer section 3.3)
5. Incorrectly fitted radios
Problems may occur when airborne radios or ground equipment are not performing according to specification. For example, if the spectrum mask exceeds the specified transmitter characteristic, then interference may occur on adjacent channels. Other problems include the incorrect setting of parameters like ‘carrier override squelch’ that might cause problems in airspace where offset- carrier systems are used.
6. Increased traffic below FL195
Operators may choose not to equip aircraft with 8.33 kHz radios and instead fly below FL195 increasing thereby the sector load and the workload of the controller (in the case of an unplanned diversion through an already congested sector). Furthermore, during the initial phases of the 8.33 kHz expansion this may lead to more conflicts to be solved in a concise airspace and it will take more time to resolve potential conflicts due to the size of airspace.
7. Lack of consistency in route structure above/below FL195
Problems may occur due to lack of consistency in the route structure. For example, not-equipped aircraft may have to be descended below the 8.33 sector and thereby they may end up off route or in uncontrolled airspace as the

	airspace below may have a totally different structure and a different airspace classification. This may, in addition, jeopardize other aircraft in the particular area.
8	Increased number of frequencies in an area
	Radios (ground equipment) are transmitting very narrow. Even though that frequency management is well-undertaken by EUROCONTROL, it is very difficult to avoid problems with interference totally. The vertical expansion will introduce a large set of new frequencies which potentially intensify the problems with too narrow frequencies (more frequencies in the same geographical area).

10.2.2 Two main aspects were expressed in this context:

i) During the early implementation phase of 8.33 channel spacing, amplified problems with interference will most probably occur until sorted out by adjustments / frequency management.

ii) During normal operations, the problem may occur as well since airspace sectorisation etc. may be changed requiring new frequencies (ANSPs asking for other/further frequencies).

10.3 SAFETY REQUIREMENTS

10.3.1 The 8 hazards have all been analysed in the context of causes and failure modes in order to identify the proper mitigation actions. The final mitigation actions – or safety requirements – are detailed in the Safety Assessment (FHA & PSSA) report. The following list of safety requirements applicable (directly or indirectly) for the State and ANSP is derived from this detailed list (for the sake of transparency, the original numbering is maintained):

4.	ANSPs shall provide ATCOs with training/briefings on the 8.33 kHz requirements relating to flight plan handling.
5.	Aircraft operators shall provide pilots with training/briefings on the 8.33 kHz requirements relating to flight planning.
7.	States that enforce mandatory carriage above FL245 shall enforce mandatory carriage above FL195 and publish an AIC describing the application in their airspace.
8.	States that do not enforce mandatory carriage above FL245 shall review the need for enforced mandatory carriage above FL195 and publish an AIC describing the application in their airspace.
10.	States shall verify that national regulations enforce mandatory carriage and enable sanctions to be applied against aircraft operators that blatantly fly non-8.33 kHz compliant aircraft in 8.33 kHz airspace.
11.	ANSPs shall ensure that the 8.33 kHz equipage status of aircraft, including State aircraft, is available to ATCOs via flight progress strips and/or radar track labels.
12.	States shall ensure that the LoAs between neighbouring ACCs define contingency procedures for handling non-8.33 kHz compliant aircraft, taking into account coordination procedures, airspace structures and airspace classes.
13.	ANSPs shall instruct ATCOs in the consistent use of the correct phraseology for requesting 8.33 kHz and UHF capability (i.e. in accordance with PANS-ATM, Doc.4444).

15.	ANSPs shall provide ATCOs with dedicated training / briefings on the 8.33 kHz requirements relating to equipage status checks.
20.	ANSPs shall ensure that the controller HMI for the display of VHF channels is consistent with R/T procedures (i.e. in accordance with amendment 80 to ICAO Annex 10, Volume II – 6 & 4 digits).
21.	Aircraft operators shall ensure that clear instructions are available in the cockpit on how to use the equipment.
25.	States shall review the need for enhanced UHF coverage as a means of handling non-8.33 kHz equipped State aircraft.
27.	States shall assess the impact of descending non-8.33 kHz equipped aircraft below FL195, taking into account factors such as minimum safe crossing altitudes etc., and determine whether modifications to sector capacity or airspace design/structures are required.
29.	States shall ensure that standard ICAO frequency planning criteria are respected when making conversions to 8.33 kHz.
30.	States shall ensure that 25 to 8.33 kHz conversions are operated for a trial period, during which time safe operation can be verified, prior to coordination in the ICAO COM 2 table.

11 LAUNCH PROCEDURE

In order to achieve a successful 8.33 kHz channel spacing implementation, the procedure described below will be followed.

DATE	RESPONSIBLE	ACTION
31 August 2006	8.33 kHz States, CFMU	8.33 kHz States to co-ordinate and CFMU to implement the required changes in the CFMU Environment database in order to prepare for the warning phase starting on 26 October 2006.
26 October 2006	CFMU	Start output warning messages for non-8.33 equipped exempted aircraft with a requested flight level above FL195 in the 8.33 kHz States.
18 January 2007 (2 AIRAC cycles)	Each ICAO EUR Region State (8.33 CP)	a) All official documentation (AIC, AIP, LoA etc.) must have been published or amended b) Ensure that all ATC centres are fully aware of and are able to operate in accordance with any changes to the 8.33 kHz channel spacing requirements by 15 March 2007 from 00.00 UTC.
23 October 2006	EUROCONTROL	Activate the dedicated 8.33 Support Cell. This Cell will consist of EUROCONTROL experts and will be available to support airspace users at the beginning of the warning period and up to and immediately following implementation.
26 October 2006	Each ICAO EUR Region State (8.33 CP)	Confirm to the secretary of PSO that all ATC centres will be able to operate in accordance with any changes to the 8.33 kHz channel spacing requirements by 15 March 2007 from 00.00 UTC
18 January 07	8.33 kHz States, CFMU	8.33 kHz States to co-ordinate and CFMU to implement the required changes in the CFMU Environment database in order to prepare for the inclusion of the 8.33 kHz above FL195 in the current 8.33 checking on 15 March 2007.
15 February 2007	Each ICAO EUR Region State (8.33 CP)	Publish the “trigger” NOTAM to notify airspace users of changes resulting from the Expansion of 8.33 kHz channel spacing operation starts on 15 March 2007 from 00.00 UTC (use the specimen provided in Annex D).
15 March 2007	CFMU	Include the 8.33 kHz above FL195 in the current 8.33 checking.
15 March 2007	Each ACC	ACC should monitor potential problems and notify the 8.33 Support Cell in the CFMU.
15 March 2007	Each 8.33 kHz State	8.33 kHz States should individually start their progressive implementation of 8.33 kHz frequency conversions with respect to FMG coordination procedures, along with notifying Eurocontrol.
15 March 2007	Each ICAO EUR Region State	Each ICAO EUR Region State must start to operate according to their revised and approved 8.33 AIC/AIP/LoA requirements as of 15 March 2007 from 00:00 UTC

12 STATE ACTIONS

To ensure a consistent and co-ordinated implementation of 8.33 kHz channel spacing area, it is necessary that all States in the ICAO EUR Region take the following actions:

12.1 Action Item 1 – PROJECT ORGANISATION

Each ICAO EUR Region State is required to nominate an "8.33 Contact Person" (8.33 CP) for the purpose of the 8.33 kHz Channel Spacing Implementation in Europe. Each State is required to put in place a Project Organisation.

✈ Contact Person Details:

Name:	
Position:	
Department:	
Organisation:	
Address:	
Tel:	
Fax:	
e-mail:	
Comments:	

12.2 Action Item 2 – PUBLISH AIC Above FL195

Each ICAO EUR Region State is required to publish an AIC for the implementation of 8.33 kHz channel spacing above FL195 (specimen AIC provided).

✈ 8.33 Enforced Mandatory Carriage: 15 March 2007? Yes / No

✈ Date of published 8.33 AIC dd / mm / yy

✈ 8.33 AIC Reference Number? _____

12.3 Action Item 3 – NATIONAL SAFETY ASSESSMENT

Required Date 24 May 2006

A National Safety Assessment should be performed, including a review of the main hazards, mitigations actions and resultant Safety Requirements (SR) contained in the "Safety Assessment (FHA & PSSA) for 8.33 kHz above FL195" report. The applicability to the local environment should also be evaluated. Guidance material is provided.

✈ A review of (National) Hazards, Mitigations and resultant safety Requirements has been performed? Yes / No

✈ Any regional-specific hazards not already covered have been identified? Yes / No

These include:_____

12.4 Action Item 4 – NATIONAL SAFETY REPORT for the PISC

Required Date 29 September 2006

Each State is responsible for ensuring that National Safety activities are completed in accordance with the requirements prevailing within that State.

The Pre-Implementation Safety Case (PISC) requires confirmation of a National Safety Assessment. This will provide evidence of safe implementation of 8.33 kHz on the National level and subsequently assure the preparedness of the States.

- ✈ A National Safety Assessment for 8.33 kHz above FL195 has been completed? Yes / No

- ✈ Have all necessary safety actions been (or planned to be) undertaken to ensure that 8.33 kHz channel spacing can be safely implemented? Yes / No

12.5 Action Item 5 – IFPS WARNING MESSAGE CO-ORDINATION

AIRAC Date - 31 August 2006

Each 8.33 kHz State is required to co-ordinate with the CFMU the necessary changes to the CFMU environment database in order to enable IFPS to output warning messages for non-8.33 kHz equipped aircraft with a requested flight level between FL195 and FL245 within the 8.33 kHz mandatory carriage airspace from 26 October 2006.

- ✈ Environmental Database Changes agreed with CFMU? Yes / No

12.6 Action Item 6 - FINAL IFPS CHECKING CO-ORDINATION

AIRAC Date - 18 January 2007

Each 8.33 kHz State is required to co-ordinate with the CFMU the necessary changes to the CFMU environment database in order to enable IFPS to include the airspace between FL195 and FL245 in the current 8.33 kHz flight plan checking from 15 March 2007. Airspaces where means to handle UHF equipped State aircraft that are non-8.33 kHz equipped are provided and airspaces where only 8.33 kHz equipped aircraft are accepted shall be indicated separately.

- ✈ Environmental Database Changes agreed with CFMU? Yes / No

12.7 Action Item 7 - AIP AMENDMENT: HANDLING STATE AIRCRAFT ABOVE FL195

Publication AIRAC Date - 18 January 2007

Each 8.33 kHz State must publish in its National AIP the 8.33 kHz channels, the rules for handling State aircraft including UHF capabilities.

- ✈ The requirement for enhanced UHF coverage, as a means of handling non-8.33 kHz equipped State aircraft, has been reviewed?
  Yes / No

- ✈ Planned / Published date for "Handling State Aircraft" policy in AIP | dd / mm / yy |

Proposed Policy to be published for Handling State Aircraft (and UHF Policy)?

12.8 Action Item 8 - PUBLISH AIP AMENDMENT

Publication AIRAC Date - 18 January 2007

Each ICAO EUR Region State is required to publish an 8.33 AIP amendment.

- ✈ Planned / Published date for 8.33 AIP amendment?
- ✈ 8.33 AIP Amendment Reference? _____
- ✈ Copy of the final 8.33 AIP Amendment sent to 8.33 PSO? Yes / No

12.9 Action Item 9 - LETTERS OF AGREEMENT

Signed by 18 January 2007

Each ICAO EUR Region State should confirm the amendment of its Letters of Agreement as required for 8.33 kHz mandatory carriage above FL195 from 15 March 2007.

- ✈ LoAs between neighbouring ACCs define contingency procedures for handling non-8.33kHz compliant aircraft, taking into account co-ordination procedures, airspace structures and airspace classes?

  Yes / No

- ✈ Reporting of LoA amendment Status for each State?

8.33 State	ACC	Neighbouring State	ACC	Amended LoA Target Date	Status Draft / Agreed / Signed	Remarks

12.10 Action Item 10 - ATS TRAINING

Each ICAO EUR Region State should ensure that all concerned personnel (especially in the Air Traffic Services) are aware of the implications of 8.33 kHz channel spacing implementation.

- ✈ Confirm 8.33 kHz above FL195 training planned / completed? Yes / No
- ✈ Confirm 8.33 kHz R/T phraseology training planned / completed? Yes / No

Note:
- ATS and Flight Crew training available on: http://elearning.eurocontrol.int/opencourses.htm (select "transfer of communications")
- Above FL195 training due July 2006

12.11 Action Item 11 - ATS PROCEDURES

Required Date 18 January 2007

Each ICAO EUR Region State should ensure that the 8.33 equipage status (as distributed by IFPS) is displayed to the Air Traffic Controllers.

States shall assess the impact of descending non-8.33 kHz equipped aircraft below FL195, taking into account factors such as minimum safe crossing altitudes etc., and determine whether modifications to sector capacity or airspace design / structures are required.

State should indicate if the following agreed operational requirements for systems support to 8.33 kHz operations above FL195 are available:

- ✈ Confirm ATC systems indicate to controllers the relevant 8.33 kHz equipage status of an aircraft via:
  - flight progress strip; or Planned / Completed Yes / No
  - through the radar track/label Planned / Completed Yes / No
- ✈ Confirm that the controller HMI for the display of VHF channels is consistent with R/T procedures Yes / No
- ✈ Confirm that for non-8.33 kHz equipped State aircraft, ATC systems indicate to controllers that the aircraft is UHF equipped
  - Planned / Completed Yes / No

Note that non-833 kHz equipped State Aircraft are exempted only if UHF equipped.

- ✈ Confirm that the possibility to change the 8.33 equipage status is provided to controllers (to cater for flight plan errors)
  - Planned / Completed Yes / No

12.12 Action Item 12 - LAUNCH PROCEDURE

Required by 18 January 2007

Each ICAO EUR Region State should ensure that the launch procedure is fully in place and confirm as soon as possible to the 8.33 PSO that it can be fully supported.

- ✈ Launch Procedure in place? Yes / No
- ✈ Trigger NOTAM published Yes / No

12.13 Action Item 13 – AIRCRAFT OPERATOR COMPLIANCE

Each ICAO EUR Region State should urge their national aircraft operator(s) to be fully compliant by the 15th March 2007

- State Letter sent to Aircraft Operators informing them on 8.33 kHz above FL195?
  Yes / No
- The estimated percentage of the national fleet that will be 8.33 kHz equipped on 15 March 2007 and expected to fly in the 8.33Hz airspace?
  ---------- %

12.14 Action Item 14 - IMPLEMENTATION OF 8.33 kHz FREQUENCIES

As Appropriate

Each 8.33 kHz State should start progressive, co-ordinated implementation of 8.33 kHz channel spaced frequencies above FL195 (where sector split permits).

States shall ensure that standard ICAO frequency planning criteria are respected when making conversions to 8.33 kHz.

States shall ensure that 25 to 8.33 kHz conversions are operated for a trial period, during which time safe operation can be verified, prior to co-ordination in the ICAO COM 2 table.

PLANNED 25 to 8.33 kHz CONVERSIONS

ACC Name	SECTOR	Current FREQUENCY	TARGET DATE For conversion Month / Year	Remarks / Constraints

13 PROCEDURES FOR THE INTRODUCTION OF 8.33 KHZ CHANNEL SPACING IN ADDITIONAL STATES FIR/UIR

The ICAO-approved carriage requirement for 8.33 kHz capable radio equipment applies in the whole ICAO EUR Region above FL195 (i.e. the “Area of Mandatory Carriage”) for safety reasons and to facilitate expansion. The introduction of 8.33 kHz channel spacing in additional FIR/UIR is at all times possible when warranted by frequency shortage considerations, but only for operations above FL195. To ensure the orderly addition of FIR/UIR implementing 8.33 kHz channel spacing, it is essential that the following steps are taken:

13.1 COORDINATE WITH THE ICAO EANPG FMG TO DETERMINE THE FEASIBILITY IN TERMS OF FREQUENCY PLANNING

- Requirements and planning for additional services.
- Notification to the FMG and to EUROCONTROL of the existing services to be converted in 8.33.
- Frequency conversion and implementation
- Planning of 8.33 new requirements through FMG planning procedures.

13.2 ADVANCE NOTIFICATION VIA AIC/AIP

- Determine an implementation date which is compatible with the requirements for the new services and the aircraft operators’ retrofit capabilities, taking into account the Frequency Management Procedures.
- Notify withdrawal of the relevant exemptions and change the date in National AIP (if such a date has been included).
- Publish AIC describing the planned changes, including the relevant dates.
- Co-ordinate with the military authorities to ensure that the required UHF coverage is provided or other means are available which can permit handling of State aircraft.

13.3 CO-ORDINATE WITH ADJACENT FIR/UIR

- Amend AIP and LoA (including contingency procedures).
- Launch operation according to predefined procedures similar to those described in chapter 11.

14 PROGRAMME SUPPORT

14.1 PROGRAMME SUPPORT OFFICE

The 8.33 kHz channel spacing implementation is co-ordinated and supported by the 8.33 Programme Support Office (8.33 PSO). For additional information you can contact the following 8.33 EUROCONTROL PSO members:

EUROCONTROL

Field	Name	Tel / Fax	E-mail
Programme Manager	Mr Peter Alty	32 (2) 729 3491 / 4655	peter.alty@ eurocontrol.int
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14.2 EUR STATES CONTACTS PERSONS – May 2006

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States	Contacts Persons	Telephone	Fax	EMAIL
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Monaco	BAYOL, Henri Héliport de Monaco Chef de Service de l'Aviation civile Terre-Plein de Fontvieille MC 98000 Principauté de Monaco	+377 9315 8024	+377 9315 8708	
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15 REFERENCE DOCUMENTATION

15.1 EUROCONTROL DOCUMENTATION

15.1.1 Implementation Plan for 8.33 kHz above FL195 in ICAO EUR Region. Ed 1.0 dated 14/10/2005

15.1.2 European Convergence and Implementation Programme (ECIP) Detailed Objectives 2006-2010 Ed1.0 20/07/2005).

15.1.3 CFMU Handbook 2006 (Edition 11.0).

15.1.4 IFPS User Manual (Edition 11.0)

15.1.5 Safety Assessment (FHA/PSSA) 8.33 kHz above FL195 Ed 2.0 dated 15/03/2006

15.2 ICAO APPROVED DOCUMENTATION

15.2.1 ICAO ANNEX 10 - Amendments 80 (November 2005) to volume II Chapter 5 and volume V (November 2001) of Annex 10.

15.2.2 The Regional Supplementary Procedures (Doc 7030/4). Note Amendment due September 2006 for above FL195.

15.2.3 The Air Navigation Plan - European Region (Doc 7754/22).

15.2.4 The Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444)

15.3 USA APPROVED DOCUMENTATION

15.3.1 RTCA MOPS for Airborne Radio Communications Equipment DO-186B (November 2005).

15.3.2 AEEC 716 supplement (October 1994) and basically included in ARINC 750 (VDL).

15.4 EUROPEAN APPROVED DOCUMENTATION

15.4.1 JAR OPS 1 sub-part L (March 1998)

15.4.2 EUROCAE ED-23 B, Version March 1995 (Amendment 3 - December 1997). Note ED-23C due OCTOBER 2006.

15.4.3 ETSI Document ETSI EN 300 676 “Electromagnetic compatibility and Radio spectrum Matters (ERM) - Ground-based VHF hand-held, mobile and fixed radio transmitters, receivers and transceivers for the VHF aeronautical mobile service using amplitude modulation”.

15.5 JAA DOCUMENTATION

15.5.1 Administrative and Guidance material, leaflet No 7: “Operations with 8.33 kHz Channel Spacing VHF Communication Radios”.

16 ANNEXES

16.1 ANNEX A - FREQUENCY LIST

Designation of VHF Channels with 8.33 and 25 kHz Spacing

The table below lists the frequencies in the VHF sub-band which will contain the 8.33 kHz spaced channels.

A	B	C	D
Spacing (kHz)	Frequencies (MHz)	25 kHz radio display	8.33 kHz radio display
	…		
25	**132.0000**	**132.00**	**132.000**
8.33	132.0000		**132.005**
8.33	132.0083		**132.010**
8.33	132.0167		**132.015**
25	**132.0250**	**132.02**	**132.025**
8.33	132.0250		**132.030**
8.33	132.0333		**132.035**
8.33	132.0417		**132.040**
25	**132.0500**	**132.05**	**132.050**
8.33	132.0500		**132.055**
8.33	132.0583		**132.060**
8.33	132.0667		**132.065**
25	**132.0750**	**132.07**	**132.075**
8.33	132.0750		**132.080**
8.33	132.0833		**132.085**
8.33	132.0917		**132.090**
25	**132.1000**	**132.100**	**132.100**
	Etc …		

As specified by the relevant provisions in ICAO Annex 10, Volume V, Chapter 4.1 (bis)

Notes:

- Columns A, B and D provide the Frequency-Channel pairing which retains the numerical designator of the 25 kHz environment and allows unique identification of an 8.33 kHz Channel as proposed for inclusion in ICAO Annex 10 by the ICAO Council of 26 February 1997.
- Column D refers to the current display of the 8.33 kHz/25 kHz environment compatible radio equipment.
- Column C refers to the 25 kHz environment only compatible radio equipment.

16.2 ANNEX B – AIP SPECIMEN

States may simply amend their existing text to reflect the above FL195 requirement

The following specimen text can be inserted in the indicated sections of AIP Amendment. Text in italics will be inserted by the State concerned as required.

1 GEN 1.5

AIRCRAFT INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Radio Equipment Requirements

As required by ICAO SUPPS DOC 7030/4 EUR/RAC Chapter 4.0 on ”Air-Ground Communications and In-Flight Reporting”, the carriage and operation of 8.33 kHz channel spacing radio equipment is mandatory throughout the ICAO EUR Region for aircraft operating above FL195.

Exemptions from mandatory carriage of 8.33 equipment are described in section ENR 1.8.

Non-equipped aircraft which are flight planned to enter any FIR/UIR in the EUR Region where no exemption has been published, except for UHF equipped State aircraft, (refer to the AIP of the State covering the FIR/UIR concerned) must flight plan to operate below FL195 throughout the entire EUR Region.

2 ENR 1.8

REGIONAL SUPPLEMENTARY PROCEDURES

The European Regional Supplementary Procedures are applied in accordance with ICAO SUPPS Doc 7030/4-EUR.

In accordance with Chapter 4.0 ”Air-Ground Communications and In-Flight Reporting”, para. 4.1.2 of ICAO SUPPS Doc 7030/4 EUR/RAC, temporary permission is hereby granted for aircraft not equipped with 8.33 kHz channel spacing radio equipment to operate in the insert name of FIR/UIR) FIR/UIR on condition that:

a) Such flight is planned to remain clear of any FIR/UIR in the EUR Region where no exemption has been published except for UHF equipped State aircraft (refer to the AIP of the State covering the FIR/UIR concerned);

OR

b) Such flight is operated in accordance with the exemptions published (refer to the AIP of the State covering the FIR/UIR concerned);

OR

c) (State list own, additional exemptions)

This temporary permission is subject to revision but is applicable at least until ddmmyyyy.

3 STATE AIRCRAFT

Non-8.33 kHz equipped State aircraft will be handled above FL195, provided that they are UHF equipped and that operational situation permits. They will be accommodated on UHF frequencies (insert more details) and/or on VHF 25 in the sectors which are not converted to VHF 8.33 and/or according to the following procedures (insert more details).

16.3 ANNEX C (i) - AIC SPECIMEN FOR 8.33 kHz STATES (Version 2)

There are two AIC specimens; one for 8.33 States and one for States not initially implementing 8.33 sectors.

The following text is expected to be inserted in the new 8.33 AIC, to be published by 8.33 States. Text in italics will be inserted by the 8.33 State concerned as required.

DRAFT

(*Number*)

8.33 kHz CHANNEL SPACING ABOVE FL-195 IN THE ICAO EUR REGION FROM 15 MARCH 2007

1 INTRODUCTION

1.1 This AIC provides advanced notification to airspace users in respect of the implementation of 8.33 kHz channel spacing above FL-195 in the ICAO EUR region.

1.2 The mandatory carriage and operation of 8.33 kHz channel spacing capable radio equipment above FL 245 in the ICAO EUR Region came into effect on 7th October 1999. Currently, 30 States enforce the mandatory carriage of 8.33 kHz radio equipment above FL245 in their airspace.

1.3 The demand for VHF assignments in the aeronautical mobile radio communication service band 118 to 137 MHz continues to grow due to:

a) The creation and modification of ATC sectors;
b) The creation and modification of air traffic services such as approach, tower and ATIS;
c) The provision of backup services and avoiding interference;
d) The provision of aeronautical operational control (AOC) services;
e) Accommodating VHF Digital Link services in the band 136.600 to 137 MHz.

1.4 In response to the increasing VHF frequency congestion, the ICAO European Air Navigation Planning Group 44 meeting, held in December 2002, decided to proceed with a phased approach to 8.33 kHz vertical expansion below FL245.

2 IMPLEMENTATION OF 8.33 KHZ ABOVE FL195 IN THE ICAO EUR REGION

2.1 The Eurocontrol Member States have supported a recommendation to implement 8.33 kHz channel spacing above FL195 in the ICAO EUR Region with a carriage date of 15 March 2007, and to amend their respective national legislations before the end of 2006 (Permanent Commission Recommendation No. 05/06). The corresponding amendment to ICAO Doc 7030 is expected before end 2005.

2.2 Eurocontrol has developed an implementation plan for 8.33 kHz above FL195 in the ICAO EUR Region. The plan foresees that initially France and UK will implement 8.33 kHz channels in their airspace above FL195, and that other States may implement at a later date. Importantly, the

plan also foresees that in order to create a homogeneous area of operations, the mandatory carriage of 8.33 kHz radio equipment above FL195 is enforced in all those States that enforce mandatory carriage above FL 245.

2.3 A revised 8.33 kHz policy for State aircraft has been approved by the Eurocontrol Civil-Military Interface Standing Committee. The policy aims to maximise the 8.33 kHz equipage of "transport-type" State aircraft, and for new aircraft procurements and planned retrofits.

3 IMPLEMENTATION OF 8.33 KHZ ABOVE FL195 IN (insert name of State)

3.1 In (insert name of State), the Mandatory carriage and operation of 8.33 kHz channel spacing capable radio equipment for aircraft operating as GAT above FL195 has an effective date of the **15th March 2007**.

4 EQUIPAGE RECOMMENDATIONS

It is recommended that:

4.1 Airspace users note the date and prepare for 8.33 kHz mandatory carriage above FL195.

4.2 Given that further phases of vertical expansion below FL195 are under consideration, all airspace users equip with 8.33 kHz capable radio equipment where new aircraft are purchased, or where the replacements of existing radios are planned.

5 FURTHER INFORMATION

For further information on the policy, planning and implementation of 8.33 kHz spaced channels in (insert name of State) can be obtained from:

(insert specific details)

General information on the 8.33 kHz Programme - policy, planning and co-ordination of 8.33 kHz channel spacing implementation can be obtained from:

8.33 kHz Programme Support Office
EUROCONTROL, Rue de la Fusée, 96, B - 1130 Brussels, BELGIUM
Tel: + 32 (2) 729 3350 / 3044 / 3491,
Fax: +32 (2) 729 4655,
E-mail: 8.33@eurocontrol.int

16.4 ANNEX C (ii) - AIC SPECIMEN FOR NON-8.33 kHz STATES (Version 1)

The following text is expected to be inserted in the new 8.33 AIC, to be published by those ICAO EUR Region States not implementing any 8.33 sectors (if not already published) or in case modification of the applicable exemptions is necessary as a result of the expansion of the 8.33kHz area. Text in *italics* will be inserted by the State concerned as required.

DRAFT

(*Number*)

8.33 kHz CHANNEL SPACING ABOVE FL-195 IN THE ICAO EUR REGION FROM 15 MARCH 2007

1 INTRODUCTION

1.1 This AIC provides advanced notification to airspace users in respect of the implementation of 8.33 kHz channel spacing above FL-195 in the ICAO EUR region.

1.2 The mandatory carriage and operation of 8.33 kHz channel spacing capable radio equipment above FL 245 in the ICAO EUR Region came into effect on 7th October 1999. Currently, 30 States enforce the mandatory carriage of 8.33 kHz radio equipment above FL245 in their airspace.

1.3 The demand for VHF assignments in the aeronautical mobile radio communication service band 118 to 137 MHz continues to grow due to:

f) The creation and modification of ATC sectors;
g) The creation and modification of air traffic services such as approach, tower and ATIS;
h) The provision of backup services and avoiding interference;
i) The provision of aeronautical operational control (AOC) services;
j) Accommodating VHF Digital Link services in the band 136.600 to 137 MHz.

1.4 In response to the increasing VHF frequency congestion, the ICAO European Air Navigation Planning Group 44 meeting, held in December 2002, decided to proceed with a phased approach to 8.33 kHz vertical expansion below FL245.

2 IMPLEMENTATION OF 8.33 KHZ ABOVE FL195 IN THE ICAO EUR REGION

2.1 The Eurocontrol Member States have supported a recommendation to implement 8.33 kHz channel spacing above FL195 in the ICAO EUR Region with a carriage date of 15 March 2007, and to amend their respective national legislations before the end of 2006 (Permanent Commission Recommendation No. 05/06). The corresponding amendment to ICAO Doc 7030 is expected before end 2005.

2.2 Eurocontrol has developed an implementation plan for 8.33 kHz above FL195 in the ICAO EUR Region. The plan foresees that initially France and UK will implement 8.33 kHz channels in their airspace above FL195, and that other States may implement at a later date. Importantly, the plan also foresees that in order to create a homogeneous area of operations, the mandatory

carriage of 8.33 kHz radio equipment above FL195 is enforced in all those States that enforce mandatory carriage above FL 245.

2.3 A revised 8.33 kHz policy for State aircraft has been approved by the Eurocontrol Civil-Military Interface Standing Committee. The policy aims to maximise the 8.33 kHz equipage of "transport-type" State aircraft, and for new aircraft procurements and planned retrofits.

3 IMPLEMENTATION OF 8.33 KHZ ABOVE FL195 IN (insert name of State)

3.1 In (insert name of State), the Mandatory carriage and operation of 8.33 kHz channel spacing capable radio equipment for aircraft operating as GAT above FL195 is temporarily exempted from the **15th March 2007 until further notice**.

4 EQUIPAGE RECOMMENDATIONS

It is recommended that:

4.1 Airspace users note the date and prepare for 8.33 kHz mandatory carriage above FL195.

4.2 Given that further phases of vertical expansion below FL195 are under consideration, all airspace users equip with 8.33 kHz capable radio equipment where new aircraft are purchased, or where the replacements of existing radios are planned.

5 FURTHER INFORMATION

For further information on the policy, planning and implementation of 8.33 kHz spaced channels in (insert name of State) can be obtained from:

(insert specific details)

General information on the 8.33 kHz Programme - policy, planning and co-ordination of 8.33 kHz channel spacing implementation can be obtained from:

8.33 kHz Programme Support Office
EUROCONTROL, Rue de la Fusée, 96, B - 1130 Brussels, BELGIUM
Tel: + 32 (2) 729 3350 / 3044 / 3491,
Fax: +32 (2) 729 4655,
E-mail: 8.33@eurocontrol.int

16.5 ANNEX D - NOTAM SPECIMEN

Though the following NOTAM Specimen relate to 8.33 kHz channel spacing, and a NOTAM code exists for 'air/ground facility', it was deemed more appropriate to use the code related to 'Aircraft entry requirement', as the common subject to all these Specimen is the introduction of the mandatory carriage of 8.33 kHz capable equipment within the EUR Region which can potentially affect the entry of a non equipped aircraft within the airspace of a State.

It is important that the dates indicated for the publication of the NOTAM and the items B) and C) are followed.

Note: The underlined space (____) is expected to be filled in by the State concerned as required.

A 'trigger' NOTAM will be published 15 February 2007 to confirm that 8.33 kHz channel spacing operation will start on 15 March 2007.

Note: The operational requirements (flight plan filing) applicable since 1st October 1998 will remain the same, except that flight plans of non-8.33 equipped aircraft planned above FL195 will be rejected as of 15 March 2007 (except where exemption(s) apply).

TRIGGER NOTAM SPECIMEN:

(A____/02 NOTAMN
Q) __XX/QOEXX/I/NBO/E/245/999/(appropriate co-ordinates, radius for whole State)
A) (location indicators of all FIR/UIR of the State)
B) 0210030000
C) PERM
E) 8.33 KHZ OPERATIONAL REQUIREMENTS ARE APPLICABLE, REF AIC (insert AIC reference) AND AIRAC AIP AMDT (insert AIP reference).
FPL, RPL OF NON 8.33 EQUIPPED AIRCRAFT WILL BE REJECTED.
IF FLIGHT IS SUBJECT TO EXEMPTION INCLUDE INDICATOR 'STS/EXM833' IN RPL AND FPL.FOLLOWING CHANNELS (insert list of CHANNELS) ARE OPERATED([1]).

[1] Applicable only to 8.33 kHz States

16.6 ANNEX E - SPECIMEN LETTERS OF AGREEMENT (LoA)

The initiation of LoA co-ordination rests with the 8.33 States and will be extended to upstream ATC-units as required and if applicable.
SPECIMEN LETTERS OF AGREEMENT REFLECTING CHANGES FOR 8.33 KHZ CHANNEL SPACING IMPLEMENTATION (finalised: 19th March 1999)

Two Specimen Letters of Agreement (LoA) follow. They are Specimen LoA 1 (between 8.33 & 8.33 States or between 8.33 & non-8.33 States) and Specimen LoA 2 (between non-8.33 & non-8.33 States).

These Specimen Letters of Agreement, which have resulted from discussions held in the 8.33 kHz Programme Regional Co-ordination Meetings throughout the EUR Region, were endorsed at the 8.33 Contact Persons Meeting No.2 (CP #2) held on the 17th and 18th of March 1999 in Brussels. These have subsequently been modified to reflect the above FL195 implementation scenario.

The meeting agreed a generic text, which should be included in every LoA, and other supporting text, which may be included in the LoA, or in national procedures, if required by the States themselves.

The supporting texts are provided as the Attachment to LoA 1 and Attachment to LoA 2.

Notes

The generic text has been written in line with that of the EUROCONTROL Common Format Letter of Agreement.

The generic text reflects the policy that no exemptions will be granted by 8.33 States, other than to UHF equipped State aircraft.

States are reminded that the Specimen LoA's are a recommendation which may be fully or partially used.

Copies of the EUROCONTROL Common Format, Cross-Border, Inter-Centre, Letter of Agreement may be obtained through the 8.33 PSO (Section 14.1).

Specimen LoA 1

8.33 kHz States[centre1] **with 8.33 kHz States** [centre2]

or

NON-8.33 kHz States[centre1] **with 8.33 kHz States** [centre2]

To be inserted in LoA Annex D if [Centre2] does not publish exemptions beyond those prescribed for UHF-equipped State aircraft.

Annex D

D.1. General conditions for acceptance of aircrafts

Except for UHF-equipped State aircraft, [Centre1] shall ensure that all aircraft identified as not equipped with 8.33 kHz channel spacing capability are co-ordinated below FL195 with [Centre2].

Annex E

E.2. Transfer of Communications

E.2.1. The transfer of communications shall take place not later than the transfer of control, unless otherwise co-ordinated.

(list here sector frequencies/channels (VHF/UHF)

E.2.2 Should an aircraft be discovered to be non 8.33 equipped at the moment of transfer, the following conditions apply:

(list here specific agreed contingency procedures, including the contingency 25kHz frequency if one is available)

See also paragraph 4.4 of the Common Format LoA.

Attachment to LoA 1

1. For aircraft operating or intending to operate above FL195 in airspace controlled by [Centre 2], [Centre 1] shall verify as soon as possible with the Pilot In Command the 8.33 and/or UHF equipment status in any doubtful case, and in cases where the IFPS FPL indicates either:

   - that the aircraft is not equipped with 8.33 kHz Channel spacing, or
   - the equipment status is unknown ("IFP/833UNKNOWN"), or
   - the flight is an exempted State aircraft, or
   - STS/SAR or STS/HOSP in field 18.

2. **Handling of non-8.33 equipped aircraft and non-exempted State aircraft**

2.1 Non 8.33 equipped aircraft

- [Centre 1] shall transfer all non 8.33 equipped aircraft and non exempted State aircraft operating below FL195;

2.2 **UHF equipped State aircraft (Military / Customs / Police)**

- [Centre 1] shall transfer all UHF equipped State aircraft to UHF Frequency (TBD);
- Approval request shall be made as soon as possible before delivering clearance to an exempt aircraft to enter airspace controlled by [Centre 2];
- Controller – controller telephone co-ordination shall be made before transfer, indicating the exemption status of the aircraft concerned.

Specimen LoA 2

NON-833 [centre1] with NON-833 [centre2]

To be inserted in LoA Annex D, if Centre2 has published an exemption policy which precludes the operation within its airspace of non-8.33 equipped aircraft intending to operate within the 8.33 States' airspace, above FL195.

Annex D

D.1. General conditions for acceptance of aircraft

Except for:
- UHF-equipped State aircraft, and
- Aircraft not intending to operate within airspace where no exemption is applicable (to its flight) :

[Centre1] shall ensure that aircraft identified as not equipped with 8.33 kHz channel spacing capability are co-ordinated with [Centre2] below FL195.

Attachment to LoA 2

1. **For aircraft operating or intending to operate above FL195 in airspace controlled by [Centre 2], [Centre 1] shall verify as soon as possible with the Pilot In Command the 8.33 and/or UHF equipment status in any doubtful case, and in cases where the IFPS FPL indicates either:**

    - that the aircraft is not equipped with 8.33 kHz Channel spacing, or
    - the equipment status is unknown ("IFP/833UNKNOWN"), or
    - the flight is an exempted State aircraft, or
    - STS/SAR or STS/HOSP in field 18.

2. Handling of non-8.33 equipped aircraft and non-exempted State aircraft

[Centre 1] shall transfer all non-8.33 equipped aircraft and non-exempted aircraft to [Centre 2] below FL195, if the aircraft is to enter the 8.33 area on its further route.

16.7 ANNEX F - STATE AIRCRAFT

1. DEFINITION OF STATE AIRCRAFT

EUROCONTROL established the following principles to clarify what is to be considered as State Aircraft within the context of European Air Traffic Management, particularly in relation to exemption policies and special procedures. In formulating the principles, careful consideration was given not to interfere with the general provisions of the Chicago Convention, article 3b, and to fully preserve the sovereignty of every State to define what State Aircraft are within their national borders. The sole purpose of the "principles" are to give clear guidance to the Air Navigation Service Providers on what constitutes State Aircraft in the European ATM environment.

PRINCIPLE 1

For ATM purposes and with reference to article 3(b) of the Chicago Convention, only aircraft used in military, customs and police services shall qualify as State Aircraft.
Accordingly:

- -Aircraft on a military register, or identified as such within a civil register, shall be considered to be used in military service and hence qualify as State Aircraft;
- -Civil registered aircraft used in military, customs and police service shall qualify as State Aircraft;
- -Civil registered aircraft used by a State for other than military, customs and police service shall not qualify as State Aircraft.

PRINCIPLE 2

A reporting mechanism should be available for cases where operators are suspected of having incorrectly claimed that their aircraft was used in military, customs and police services.

PRINCIPLE 3

States shall ensure compliance with the above mentioned recommendations and investigate reports of incorrect claims.

PRINCIPLE 4

States shall develop provisions/procedures as part of their rules of the air, and reports referred to in Principle 3 above be acted upon in accordance with Article 12 of the Chicago Convention.

2. UHF COVERAGE – HANDLING OF NON 8.33 STATE AIRCRAFT

The following additional information was available at the time of printing. This information will be reviewed in light of the new policy for State aircraft, the planned military equipage plans and the revised plans by the States for UHF coverage.

This information is subject to possible changes. **Please refer to State National AIPs for the official position of each State**.

2.1 8.33 kHz States

AUSTRIA - UHF is not available in Austria with the exception of West of 12°E which is

delegated to Munich and where UHF coverage is available. In the East of 12°E part of Austria, 8.33 is implemented only above FL 335 and UHF equipped aircraft are allowed to fly between FL195 and FL 335. Any expansion of the 8.33 implementation should be carefully studied in co-operation with the military authorities.

BELGIUM, NETHERLANDS, LUXEMBOURG - These States use the EUROCONTROL Maastricht UAC which is handling military aircraft flying GAT on UHF.

BOSNIA HERZEGOVINA ATC services are delegated to Croatia and the Federal Republic of Yugoslavia that will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

CROATIA will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

CZECH REPUBLIC will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

DENMARK will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

ESTONIA will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

SERBIA & MONTENEGRO will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

FINLAND will accommodate non 8.33 equipped State aircraft flying GAT in the FIR Tampere on UHF frequencies.

FRANCE - French ACCs are providing an adequate UHF coverage to military.

FYROM will provide limited UHF coverage and will handle non 8.33 equipped UHF State aircraft under specific procedures to be inserted in the State AIP.

GERMANY - is handling military aircraft flying GAT on UHF. It also includes the delegated part of Austria.

IRELAND will not accommodate non 8.33 equipped State aircraft flying GAT.

HUNGARY will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

ITALY will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

LATVIA No answer

LITHUANIA has not yet decided how non 8.33 equipped State aircraft flying GAT will be accommodated.

NORWAY will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

POLAND will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

PORTUGAL will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

ROMANIA has not yet decided how non 8.33 equipped State aircraft flying GAT will be accommodated.

SLOVAKIA will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

SLOVENIA will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

SPAIN will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

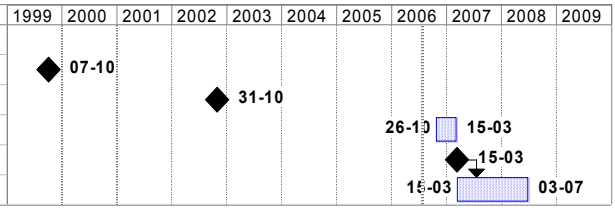
SWEDEN will accommodate non 8.33 equipped State aircraft flying GAT on UHF frequencies.

SWITZERLAND - is using a limited number of UHF frequencies. Switzerland considers that this coverage is sufficient to provide the service for the military flying as GAT in a normal situation.

UNITED KINGDOM will accommodate non 8.33 State aircraft on UHF in London FIR. In a first step the Scottish Air traffic control centre will not have UHF capabilities and non 8.33 State aircraft will be handled as OAT on UHF when flying in 8.33 sectors.

16.8 ANNEX G - GENERAL PLANNING

ID	Task Name
1	
2	DATE OF MANDATORY CARRIAGE ABOVE FL245
3	DATE OF 8.33 kHz HORIZONTAL EXPANSION ABOVE FL245
4	**IFPS / CFMU WARNING PHASE**
5	**DATE OF MANDATORY CARRIAGE ABOVE FL195**
6	**FREQUENCY CONVERSIONS**



16.9 ANNEX H - LIST OF TERMS AND ABBREVIATIONS

8.33 CP	8.33 Contact Person
8.33 kHz State	A State enforcing the mandatory carriage of 8.33 kHz radio communication equipment
ACC	Area Control Centre
ACG	ATM/CNS Consultancy Group
ACK	Acknowledgement Message
AEEC	Airlines Electronic Engineering Committee
ADEP	Aerodrome of Departure
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AMCP	Aeronautical Mobile Communication Panel
AMS	Aeronautical Mobile Service
AO	Aircraft Operator
ARINC	Aeronautical Radio, Inc.
ATC	Air Traffic Control
ATS	Air Traffic Services
CFMU	Central Flow Management Unit
CHG	Modification Message
CIP	Convergence and Implementation Programme
DSB	Double Side Band
EANPG	European Air Navigation Planning Group
ECAC	European Civil Aviation Conference
EOBT	Estimated Off Blocks Time
ETSI	European Telecommunication Standardisation Institute
EUR RAN	European Regional Air Navigation (Meeting)
EUR Region	European Region
EUROCAE	European Organisation for Civil Aviation Equipment
EUROCONTROL	European Organisation for the Safety of the Air Navigation
FIR	Flight Information Region
FL	Flight Level
FM	Frequency Management issues
FMG	Frequency Management Group
FPL	Flight Plan (Message)
GAT	General Air Traffic
HOSP	Hospital Flight
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFPS	Integrated Initial Flight Plan Processing System
IFPZ	IFPS Zone
ITU	International Telecommunication Union
JAA	Joint Aviation Authorities
LoA	Letter of Agreement
MATSE	Meeting on the Air Traffic System in Europe
MOPS	Minimum Operational Performance Standards
MTBF	Mean Time Between Failure
PSO	Programme Support Office
RFL	Requested Flight Level
RMP	Radio Management Panel
RPL	Repetitive Flight Plan
RRP	Rerouting Proposal Message
RTCA	Requirements and Technical Concepts for Aeronautics
SAR	Search And Rescue
SARPS	Standards and Recommended Practices
SCG	Stakeholder Consultation Group
TOR	Terms of Reference

UIR	Upper Information Region
UTC	Universal Time Co-ordinated
VDL	VHF Digital Link
VDR	VHF Digital Radio
WG	Working Group